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CONVULSIONS IN CHILDHOOD

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In May 1932 I [1] reported the results of a study of convulsions in children. A new classification was presented with the hope of offering some assistance in the understanding and in the diagnosis of the convulsive states. At the suggestion of Lennox, a further study was made of the case histories reported, particularly in regard to the age at the time of the first convulsion. The information obtained together with the data on eighty-one additional cases necessitates a revision of my classification.

This revised classification is presented on the basis of 500 cases in children who were brought to the hospital or to the office in the past nine and one-half years because of convulsive seizures. As stated in the previous report, only those cases are included in which a complete study was made. This includes a careful physical examination, usually a period of observation, a neurologic examination, a complete blood count, such blood chemistry (determinations of the calcium, phosphorus, nitrogen, sugar and dextrose tolerance, and the like) as is deemed necessary, urinalyses, examinations of spinal fluid, encephalograms when indicated, examinations of the fundi, roentgen examinations, stool examinations and the like. Many cases were studied for months before a diagnosis was made. In some cases (thirty-two) I was unable to make a definite diagnosis after I had exhausted the facilities at my disposal. These cases are listed as "cause unknown." In thirty-four cases the age at the time of the first convulsion could not be obtained. These are listed in the entire series (table 1) and again separately in table 2.

Under "cause unknown" are possibly included some unrecognized cases due to sinus thrombosis, allergic reactions, hypoglycemia and hyperinsulinism. The absence of these diagnoses does not indicate errors of omission. No such diagnosis could be established in the thirty-two cases in which the condition was in doubt.

Sinus thrombosis was a likely cause in some of the cases associated with or following gastro-enteritis, but it was not possible to be definite. Byers and Hass [2] made a study of fifty cases of thrombosis of the intracranial venous sinuses in infancy and childhood. The infants with primary thrombosis did not present a typical clinical picture but were usually diagnosed as having an acute nutritional disturbance. The physical examination was often negative except for severe dehydration. Convulsions were common in the second week and were usually sudden in onset and jacksonian in type. The diagnosis was seldom made ante mortem.

It is probable that some allergic conditions may cause edema of the brain and thus produce a convulsion.[3] I was not able to recognize the presence of such a condition in any case.

Cases of convulsions due to hypoglycemia and hyperinsulinism have been cited in the literature.[4] Whenever the history was at all suggestive in my cases, i. e., when the seizures occurred early in the morning, particularly after a twelve-hour fast or longer, or when they occurred consistently before or at meals, special examinations such as blood sugar determinations and dextrose tolerance tests were made. Several children have been referred to me with the diagnosis in point but the observations have not been conclusive. The following is an illustrative case:

CASE 1.—A girl, aged 9 years, complained of short spells of unconsciousness (petit mal) occurring about once a month for the past one and one-half years. These seizures have been increasing in frequency and severity, until three weeks before admission there was a grand mal attack. The attacks are often (not always) associated with exhaustion; they occur more often before meals. Following the attacks there is fatigue and usually a frontal headache. The father and the father's father, mother and sister have or have had migraine. The patient's sister, aged 7 years, also has had migraine for one year and often has attacks of headache and vomiting following her sister's attack of petit mal.

Physical examination by a number of pediatricians, an endocrinologist, several internists, a neurologist and an ophthalmologist revealed no abnormalities of any significance. A proctologist was called in because of some blood in the stool, and a papilloma was removed from the rectum.

The child weighed 65 pounds (30 Kg.) and was 52¼ inches (131.6 cm.) in height; her nutrition was good, her mentality was normal and her progress in school was normal.

Laboratory examinations showed urinalyses, normal; blood counts, normal. The basal metabolic rates were within normal limits. Roentgenograms of the skull were negative.

May 27, 1933, a dextrose tolerance test was made elsewhere with the following report:

8:30 a. m., fasting, 53.3 mg.
8:50 a. m., dextrose, 50 Gm.
9:35 a. m., blood sugar, 57.8 mg.
10:20 a. m., blood sugar, 63.2 mg.
11:05 a. m., blood sugar, 67.9 mg.
11:50 a. m., blood sugar, 48.5 mg.

From the same clinic it was reported that "an allergic review showed a sensitivity to various foods and following their removal there has been no improvement."

From the Milwaukee Children's Hospital and the Department of Pediatrics, Marquette University Medical School.

1. Peterman, M. G.: Convulsions in Childhood, J. A. M. A. **99**: 546 (Aug. 13) 1932.

2. Byers, R. K., and Hass, G. M.: Thrombosis of the Dural Venous Sinuses in Infancy and in Childhood, Am. J. Dis. Child. **45**: 1161 (June) 1933.

3. Rowe, A. H.: Food Allergy, Philadelphia, Lea & Febiger, 1931, pp. 257, 291.

4. Harris, Seale: Epilepsy and Narcolepsy Associated with Hyperinsulinism, J. A. M. A. **100**: 321 (Feb. 4) 1933. Josepha, H. W.: Fasting as a Cause of Convulsions, Am. J. Dis. Child. **31**: 169 (Feb.) 1926.

Examinations in my service at the Milwaukee Children's Hospital, June 12, showed skin tests negative to all food extracts.

June 14, roentgen examination of the stomach and small bowel (Columbia Hospital, Dr. S. A. Morton) gave the following results: The esophagus was normal. The stomach was normal in size and position. Peristalsis was normal. The duodenal cap filled well and there was no radiographic evidence of lesion in the stomach or duodenal bulb. The duodenum was well outlined under the fluoroscope and by plates, and at no time was anything seen suggesting any pathologic condition in the region of the duodenum. The stomach emptied normally, as a plate taken after one and one-half hours showed that the stomach was practically empty and the barium was distributed throughout the small bowel as far as the cecum. A plate taken after five hours showed all the barium in the colon.

There was no roentgenographic evidence of lesion in the stomach or small bowel. The shadow of the kidney on the right side was larger than that on the left and seemed a little larger than was usually seen in a child of this age.

The results of dextrose tolerance tests are given in tables 3, 4 and 5.

June 15, the blood calcium was 14 mg. per hundred cubic centimeter, the phosphorus, 5.1 mg.

June 19, the blood calcium was 13.3 mg., the phosphorus, 4.5 mg.

June 22, the spinal fluid was clear and under no increased pressure. It contained 2 cells, no globulin, and 53 mg. of sugar. A test for colloidal gold was negative. A blood sugar count taken at the same time was 113 mg. (capillary blood—Gibson method).

June 24, blood taken immediately after a seizure showed a sugar value of 74 mg. (micro-Gibson method on capillary blood).

July 4, blood taken immediately after a seizure showed a sugar value of 66 mg. (macro-Folin-Wu).

June 21, the child was put on a fasting diet.

July 3, she was put on the ketogenic diet.

July 6, she was given 10 units of insulin at 8:45 a. m. after a breakfast at 7:30 a. m. There was no reaction. At 4:30 p. m. she was given 20 units of insulin without a seizure. At 5 p. m. the child had her evening meal and at 5:20 there was a reaction of nervousness, tremor and weakness but no seizure.

TABLE 1.—*Entire Series*

Diagnosis	Number	Per Cent
Epilepsy (idiopathic)	165	33.0
Acute infection	115	22.8
Cerebral birth injury or residue	76	15.4
Spasmophilia or tetany	68	13.6
Miscellaneous	44	8.8
Cause unknown	32	6.4
Total	500	100.0

TABLE 2.—*Age of Onset Unknown*

Diagnosis	Number	Age When Seen
Epilepsy	12	2 yrs., 3 yrs., 4 yrs., 4 yrs., 6 yrs., 6 yrs., 6½ yrs., 7½ yrs., 8 yrs., 10½ yrs., 12 yrs., 14½ yrs.
Acute infection	6	3 mos., 6 mos., 8 mos., 9 mos. 2 yrs., 7 yrs.
Unknown	6	7½ yrs., 8 yrs., 9 yrs., 9 yrs. 9 yrs., 12 yrs.
Tetany	3	6 mos., 1 yr., 15 mos.
Cerebral birth injury, residue	2	1 yr. 7 mos., 7 yrs.
Spasmophilia	1	4 mos.
Tetanus	1	3 yrs.
Skull fracture	1	2½ yrs.
Poliencephalitis (Strümpell-Marie)	1	6 yrs.
Jacksonian epilepsy	1	10 yrs.
Total	34 (6.8 per cent of the total cases)	

TABLE 3.—*Dextrose Tolerance Test, June 12*

Time	Time After Ingestion of Dextrose	Blood Sugar, Mg. per 100 Cc. Gibson Micro-capillary	Blood Sugar, Mg. per 100 Cc. Folin Macro	Urine Cc.	Urine Sugar
Before		102.0	90.9	120	0
9:15	50 Gm. dextrose				
9:30	15 minutes	141.5	.....	83	0
9:45	30 minutes	222.2	143.8	110	0
10:00	45 minutes	Tube broken	.....	110	0
10:15	1 hour	140.1	.....	20	0
10:30	1 hr. 15 min.	135.1	.....	60	0
10:45	1 hr. 30 min.	125.4	90.0	110	0
11:15	2 hours	78.5	.....	130	0

TABLE 4.—*Dextrose Tolerance Test, June 15*

Time	Time After Ingestion of Dextrose	Blood Sugar, Mg. per 100 Cc. Gibson Micro-capillary	Blood Sugar, Mg. per 100 Cc. Folin Macro	Urine Cc.	Urine Sugar
Before		127.1	99.0	...	0
8:40	60 Gm. dextrose				
8:55	15 minutes	194.8	.....	...	0
9:10	30 minutes	174.4	118.2	...	0
9:25	45 minutes	198.6	.....	...	0
9:40*	1 hour	157.0	108.7	...	0
10:10	1 hr. 30 min.	198.6	118.2	...	Specimen not obtained
10:40	2 hours	180.7	98.0	...	0
11:10	2 hr. 30 min.	98.7	.....	...	0

* There was a proctoscopic examination between 9:40 and 10:10.

TABLE 5.—*Dextrose Tolerance Test, June 23* *

Time	Time After Ingestion of Dextrose	Blood Sugar, Mg. per 100 Cc. Gibson Micro-capillary	Blood Sugar, Mg. per 100 Cc. Folin Macro	Time	Urine Sugar	Urine Acetone	Urine Diacetic
Before		61.4	66.2	24 hr. specimen	0	+	0
8:30	60 Gm. dextrose						
8:45	15 minutes	110.2	.....	8:40	0	+	0
9:00	30 minutes	162.1	155.0	9:05	0	+	0
9:15	45 minutes	294.1					
9:30	1 hour	306.1	199.0	9:40	0	+	0
10:00	1 hr. 30 min.	280.3	236.6	10:00	0	+	0
10:30	2 hours	315.7	256.4	10:45	h. tr	+	0
11:00	2 hr. 30 min.	294.1					
11:30	3 hours	260.0	201.9				
12:30	4 hours	233.3	.....	12:30	Specimen lost		
1:45	5 hr. 15 min.	243.9					
2:30	6 hours	122.9					
3:30	7 hours	84.7	.....	3:15	0	0	0

* The patient has been on fast since June 21. The results are not unusual in fast.

TABLE 6.—*Treatment*

1. Protect against injury
2. Chloroform anesthesia
3. Magnesium sulphate:
   5 to 20 cc. of 25% sterile solution intramuscularly
   or
   5 to 10 cc. of 20 to 10% sterile solution intravenously, slowly
   or
   60 to 180 cc. of 50 to 25% solution by mouth or rectum, repeated if necessary
4. Spinal drainage if no brain tumor
5. Phenobarbital sodium subcutaneously
6. Sodium amytal intravenously or intramuscularly
7. Chloral by rectum
8. Treat basic cause

The diagnosis that I made in this case was idiopathic epilepsy based on the family history, the character of

the seizures and the temporary exclusion of an organic lesion.

It is not my contention that cerebral sinus thrombosis, allergic reactions, hypoglycemia and hyperinsulinism do not cause convulsions in children. I wish merely to state that I have been unable to establish such a diagnosis in my series of cases.

TABLE 7.—*New-Born (to 1 Month) (Age of Onset)*

Diagnosis	Number	Per Cent
Cerebral birth injury	18	54.7
Acute infection	4	12.3
Epilepsy	3	9.0
Hydrocephalus	2	6.0
Spasmophilia	2	6.0
Meningovascular syphilis, congenital	1	3.0
Gastro-enteritis	1	3.0
Meningitis, streptococcic	1	3.0
Unknown	1	3.0
Total (6.6 per cent of the total cases)	33	100.0

Criticism has been made that I have placed the entire blame of seizures on a single cause.[5] This is a misunderstanding. In a previous communication I stated: "The infant and the child are subject to certain diseases, which in themselves are the exciting factors or indirect causes of convulsions. When the period of incidence of these diseases is passed, and thus the exciting causes are removed, the incidence of convulsions is greatly lowered."[1]

It is obvious that a convulsion is only a symptom, the final explosion of a complex reaction, the trigger mechanism of which may be a number of factors. However, the same stimulus applied to a group of children will elicit no consequential reaction in the normal subject but a characteristic type of convulsion in the patient with tetanus, another type in the epileptic, and still another in the infant with spasmophilia. I wish simply to point out that there are certain disease entities which create in the patient a susceptibility to the convulsive state. The banging of a door may set off the seizure; but when the tetanus infection is gone, when the spasmophilic patient's blood calcium and phosphorus are normal, the same stimulus will not produce a convulsion. Lennox has nicely detailed the multiple causes of a seizure, which I believe applies to most convulsive disorders.[5] His report of psychic or emotional causes of a convulsive disorder gives me courage to report the following case:

TABLE 8.—*From 1 to 6 Months (Age of Onset)*

Diagnosis	Number	Per Cent
Acute infection	20	29.4
Cerebral birth injury	16	23.5
Spasmophilia	11	16.1
Epilepsy	5	7.4
Gastro-enteritis	3	4.5
Meningitis, meningococcic	1	1.5
Unknown	12	17.6
Total (13.6 per cent of the total cases)	68	100.0

CASE 2.—A girl, aged 4 years, was admitted, May 27, 1929, shortly after she had had her right forearm and hand caught in an electrical clothes wringer. There was an abrasion of the skin on the forearm, edema and marks of contusion but no fracture. The injury was treated and the child sent home. May 28, the child had a convulsive seizure, which began with pain in the right forearm; the face was "drawn to one side," the eyes rolled, and the right arm twitched. Two and one-half weeks later there was a second, similar seizure. In July there were two and in August three seizures. September 1 there was another seizure, which lasted five minutes, after which the child was brought into the hospital. Examination revealed scars on the right elbow. The urine and blood count were normal. The Mantoux tuberculin test (with 0.001 mg. of old tuberculin) was negative. The Wassermann and microprecipitation tests were negative on blood serum and spinal fluid. The spinal fluid was clear and under no increased pressure; globulin was normal, the sugar value was 63 mg. and culture was negative. The neurologist found nothing abnormal. A lateral roentgenogram of the skull showed no abnormalities.

The family history in this case was not positive. She was a full term child, of the second pregnancy, weighing 9 pounds (4,082 Gm.), born after a long labor, with forceps. She sat at 5 months, talked at 11 months and walked at 12 months. She had had a mild case of measles with no complications or sequelae.

My diagnosis in this case was jacksonian convulsions due to brain injury (?). The psychic trauma seems responsible for the injury (?), which might be called by Krasnogorski a "functional ulcer of the brain."[6]

Opening in left parietal region of skull in case 3.

The following case will be of medicolegal as well as of scientific interest:

CASE 3.—A girl, aged 2½ years, admitted, June 25, 1927, had fallen from a second story window onto a sidewalk, June 15. She was unconscious when picked up and was taken to the Emergency Hospital. Examination there revealed a hematoma of the left parietal region and bleeding from the nose and mouth. Three hours after admission, spinal puncture yielded a bloody fluid under great pressure. Convulsions of the right side of the body developed. Operation revealed a linear fracture in the left parietal region with gaping of the edges. A fragment of the skull 1 inch (2.5 cm.) in diameter was separated and removed. After operation she regained consciousness and showed a marked improvement. Six hours later she had a sharp rise in temperature and a return of convulsions on the right side. June 25, she was transferred to the Milwaukee Children's Hospital. July 1 there was an occasional tonic spasm and partial paralysis of the right arm and leg and a partial central paralysis of the right side of the face. The right pupil was larger than the left. There was a bilateral ankle clonus and a positive Babinski reflex on the right. The fundi were normal. The urine and blood count were normal and the Wassermann reaction was negative.

April 5, 1928, the child was readmitted for an acute infection of the upper respiratory tract. At that time there was

5. Lennox, W. G.: New England J. Med. **209**: 386 (Aug. 24) 1933.

6. Krasnogorski, N. I.: Psychology and Psychopathology in Childhood as a Branch of Pediatric Investigation, Acta Paediat. **11**: 499, 1932.

noted a bulging, pulsating hernia through the opening in the left parietal region of the skull, as shown in the accompanying illustration. There had been no seizures and there was no paralysis. Dec. 7, 1931, the child was brought back with the complaint that for two months she had had spells when the right leg would give way, causing her to fall. In these attacks the right arm twitched and the eyes and mouth were drawn to the right. She was unable to talk during the seizure and there was loss of sphincter control. After the attack she would sleep for half an hour. These attacks occurred three or four times a week without an aura. Occasionally there was sudden projectile vomiting half an hour after the seizure. Examination revealed the cerebral hernia previously described. The gait was normal. There was marked exaggeration of the patellar reflexes and some ataxia of the right arm in the finger to nose test. Blood pressure was 110 systolic, 74 diastolic. The spinal fluid was normal.

Thus there was an interval of four and one-third years between an injury to the brain and the resultant jacksonian convulsions. While I have observed intervals of three years between a difficult birth and the resultant convulsions, case 3 presents the longest interval between the injury and the resultant convulsive seizures in this series. In all three of the foregoing cases a multiplicity of factors may have contributed to set off the mechanism of the convulsive seizure, but the pathologic basis that was responsible for the liability to convulsions is clear.

TABLE 9.—*From 6 to 36 Months (Age of Onset)*

Diagnosis	Number	Per Cent
Acute infection	59	29.3
Spasmophilia	45	22.4
Epilepsy (idiopathic)	39	19.4
Cerebral birth injury	25	12.4
Meningitis (meningococcic, 3; influenzal, 3; streptococcic, 2; tuberculous, 1; staphylococcic, 1)	10	5.0
Encephalitis residue	3	1.5
Hydrocephalus	2	1.0
Brain injury (traumatic)	2	1.0
Intracranial vascular lesion	2	1.0
Poliencephalitis, Strümpell-Marie	2	1.0
Gastro-enteritis	1	0.5
Congenital syphilis	1	0.5
Pertussis, sequel (intracranial hemorrhage)	1	0.5
Encephalitis, chronic	1	0.5
Unknown	8	4.0
Total (40.2 per cent of the total cases)	201	100.0

TABLE 10.—*From 3 to 10 Years (Age of Onset)*

Diagnosis	Number	Per Cent
Epilepsy (idiopathic)	77	59.0
Acute infection	17	13.0
Cerebral birth injury	14	10.0
Tetanus	4	3.0
Jacksonian epilepsy	3	2.0
Congenital brain defect	2	1.5
Brain tumor	2	1.5
Encephalitis residue	2	1.5
Residue brain injury (traumatic)	2	1.5
Hydrocephalus, congenital	1	0.8
Meningitis, streptococcic	1	0.8
Congenital syphilis	1	0.8
Gastro-enteritis	1	0.8
Tertian malaria	1	0.8
Unknown	4	3.0
Total (26.4 per cent of the total cases)	132	100.0

TABLE 11.—*From 10 to 15 Years (Age of Onset)*

Diagnosis	Number	Per Cent
Epilepsy (idiopathic)	26	81.2
Tetanus	2	6.3
Congenital malformation of brain	2	6.3
Encephalitis residue	1	3.1
Cerebral birth injury residue	1	3.1
Total (6.4 per cent of the total cases)	32	100.0

Finally, there are certain families in which the incidence of convulsions in childhood is particularly high. Case 4 is one of such a group:

CASE 4.—A boy, aged 3½ years, of the second pregnancy, had a normal birth after five hours of labor. There had been normal development. At 17 months the patient had one seizure with tonsillitis; at 20 months there was a recurrence of tonsillitis but no seizure. At 21 months there was severe grand mal when he fell to the floor; he became cyanotic and frothed at the mouth and subsequently had a deep sleep. A third convulsion occurred two weeks later and a fourth after eight weeks. There was a free interval of seven months, after which four convulsions developed at intervals of from two to three weeks. Urinalysis was negative and blood counts were normal. The blood calcium was 12 mg. and phosphorus 7.2 mg. Blood sugar after a twelve hour fast was 93 mg. The fundi were normal. Roentgenograms of the head and chest were negative. Skin tests were negative to all common foods.

The family history is important. The child's mother's third cousin was diagnosed as epileptic. The child's father had nine convulsions in early childhood, but none since. His father's mother's family included fourteen members who had had convulsive seizures in early childhood; one cousin had had about 100 seizures before she was 8 years old, at which time they stopped. She is now 33 and has a child who had convulsions in early childhood. One of the father's brothers had migraine.

In this case the heredity provides an excellent basis for the diagnosis of epilepsy. However, it is questionable whether the same diagnosis would apply to all the members subject to convulsions. It is only when the convulsions recur and after various unrelated (?) stimuli and when all organic lesions are excluded that the diagnosis of idiopathic epilepsy may be made.

The treatment of convulsions remains the same as reported[1] (table 6).

SUMMARY

A revised classification of convulsions in 500 children demonstrates the basic diagnosis as epilepsy in 33 per cent of the cases, onset of acute infection in 22.8 per cent, cerebral birth injury or residue in 15.4 per cent, spasmophilia in 13.6 per cent, miscellaneous causes in 8.8 per cent, and cause unknown in 6.4 per cent (table 1). There was no recognized case of cerebral sinus thrombosis, allergic basis, hypoglycemia or hyperinsulinism in this series. Six and six-tenths per cent of the convulsions occurred in the first month of life (table 7); 13.6 per cent in the second five months of life (table 8); 40.2 per cent, the largest number, between 6 and 36 months of age (table 9); 26.4 per cent between 3 and 10 years of age (table 10); and 6.4 per cent between 10 and 15 years of age (table 11). In 6.8 per cent of the cases the age of the child at the time of the first convulsion could not be obtained (table 2).

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Cause and Effect.—It may seem to be beyond doubt that every effect must have a cause, and it is upon this assumption that we seek to cure a disease by the tracing of it to its cause, whether in the field of physical medicine or in that of the disorders of mind. It is suggested, however, that the hypothesis of cause and effect is not always valid in the way in which it is used, and that in spite of its undoubted usefulness to scientific progress in the past it has by our wrong use of it involved us in a series of corrective fallacies, also doing duty as hypotheses, which have obscured the true progress both of the science and the art of medicine.—Howe, E. G.: The Causal Fallacy, *Lancet* **1**:611 (March 24) 1934.

ACUTE POSTOPERATIVE OBSTRUCTION OF THE LOWER SMALL INTESTINE

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In the wide publicity that has been accorded the subject of intestinal obstruction, little attempt has been made to separate high obstruction from low obstruction. In the average discussion of either type both the symptoms and the treatment are based on a summation of observations made on the two types of obstruction. This has, I think, resulted in failure to appreciate several very important peculiarities in the symptoms and the general clinical picture of low obstruction. Indeed, I believe it largely accounts for the very unsatisfactory results that follow the occurrence of low obstruction as a postoperative complication.

If reliable statistics were obtainable I believe it would be discovered that the mortality of low obstruction is greater than that of high obstruction. Statistics on the subject of low obstruction are not accurate because the final diagnoses on hospital charts, from which data are obtained, are not confirmed by visual evidence (operation or necropsy) in a sufficiently large percentage to justify confidence in statistics so compiled. This statement is based on the fact that at St. Luke's Hospital, where this study was conducted, it was only after the percentage of necropsies had reached the high figure of 94.2 (the second largest in the United States) that any suspicion of the frequency of low obstruction or the inaccuracy of its premortem diagnosis was entertained. There is little doubt that the same discovery awaits other investigators whose studies are based on necropsy examinations of practically every case diagnosed as "peritonitis," "paralytic ileus," or the like.

The persistent appearance of these cases of low obstruction at necropsy prompted me to study a series of twenty-five in an attempt to discover some explanation for the failure to diagnose and to treat successfully this type of obstruction. I regarded it important to confine the study to those cases which had been examined at necropsy, because by such examination I could positively exclude the possibility of some condition other than obstruction as being a factor in the production of symptoms. Four of the patients in this series had been operated on to relieve the obstruction; five had had enterostomies performed, and ten had been treated expectantly by either constant or intermittent decompression with the nasal or stomach tube. The remaining six cases had been wrongly diagnosed and treated as peritonitis or paralytic ileus. Of most significance, however, is the fact that, with the exception of two in which enterostomies had been performed, none of the cases had been diagnosed or treated early enough to hope for success. The results of the study that seemed important in the diagnosis of the condition are summarized in the accompanying table and will be discussed in some detail.

ANALYSIS OF LOW OBSTRUCTION

In considering the problems of the diagnosis and the treatment of low obstruction it is of value, I think, to divide low obstruction into two stages. Justification for such a division becomes obvious if it is recognized that low obstruction is a disease that follows a rather definite progression from a primary mechanical interference with the normal flow of intestinal fluid to a secondary series of pathologic, nonmechanical changes occurring in the walls of the obstructed loops which apparently produce and are followed by a fatal toxemia.

The normal intestinal tract may be compared to an elastic tube in which peristaltic movements maintain a constant flow of fluid in a caudal direction. When simple obstruction stops the flow of this fluid the only change that occurs is a mechanical damming back of the fluid above the point of obstruction. Since there is no interference with the production of the fluid in the obstructed loops, the volume of the fluid steadily increases above the obstruction. This increased volume mechanically dilates the intestinal walls and as a result sets up the mechanism of hyperperistalsis so characteristic of this stage of obstruction. The patient at this time complains of pain, distention, and sometimes regurgitation of greenish brown, practically odorless fluid but is otherwise in as good general condition as before the obstruction occurred. The innocuous character of the changes is further shown by the fact that there is no appreciable change in temperature, pulse, leukocyte count, urine or blood chemistry. On examination of the obstructed loops one notes that they are dilated and contain an excess of fluid but retain much of their normal firmness and elasticity and that the walls are translucent and of about normal color.

Within a variable time, however, the entire clinical picture changes. The patient, whose general condition such a short time before was comparatively good, shows unmistakable evidence of toxemia, characterized by listlessness, muttering delirium and fibrillary twitchings of the muscles of the face and the extremities. The abdominal distention increases and is associated with an almost constant regurgitation of brownish, foul smelling fluid. In contrast to the practically normal laboratory observations in the earlier period the temperature, pulse and leukocytes rise, the urine frequently contains albumin, and the blood chlorides rapidly decrease.

Examination of the obstructed loops at this time shows them to be greatly dilated and to have lost their previous elasticity and firmness. Indeed, they are so friable that frequently the slightest trauma will cause their rupture. From the stomach to the obstruction they have an opaque, grayish or purplish appearance quite different from that observed in the earlier period.

In analyzing these two stages, or periods, of low obstruction it seems clear that in the early period the intestinal changes are essentially mechanical. All clinical symptoms as well as all pathologic manifestations seem due only to the fact that an obstruction to the normal, constant flow of intestinal fluid has occurred. With the exception of the hyperperistalsis, the intestinal changes could be duplicated by tying off a thin elastic tube through which a constant stream of fluid was caused to flow. Evidence of the innocuous nature of the changes is furnished by the good general condition of the patient. In the latter period, however, it seems equally obvious that the secondary changes in the obstructed loops have become of primary significance to the organism. Not only does the intestinal fluid change to a foul smelling, brownish substance, but the walls of the obstructed loops have a gross appearance suggestive of advancing degeneration. Indeed, from their color, their extreme friability and their opacity one gets the impression of an incipient necrosis. Paralleling the latter changes there develops a marked and progressive toxemia.

STAGES OF LOW OBSTRUCTION

Based on this conception of low obstruction, it would seem logical to divide the condition into two definite stages and to designate them as (1) the stage of obstruction, which begins with the occurrence of the obstruction, includes only mechanical changes, and ends with the supervention of the degenerative cellular changes in the obstructed loops and the appearance of toxemia, and (2) the stage of degeneration, which immediately follows the stage of obstruction, includes mainly cellular, nonmechanical changes and continues until the concomitant toxemia causes death of the patient. Though the transition from the stage of obstruction to the stage of degeneration is often insidious, each stage is sufficiently characteristic from both a clinical and a gross pathologic standpoint to be readily differentiated. Indeed, I believe that division of low obstruction into these two stages forms the only basis on which one can properly evaluate the symptoms of the disease and rationally institute its treatment.

SYMPTOMS OF STAGE OF OBSTRUCTION

As shown in the accompanying table, there are two symptoms that are always present in the stage of obstruction. These are pain and abdominal distention. In addition to these two, but not occurring in all cases, is vomiting. Several observations made on each of these will be discussed in some detail.

Pain.—The pain of low obstruction apparently begins with the occurrence of the obstruction. It is almost always of the familiar cramplike variety but occasionally, according to the interpretation of six patients in this series, may be constant from the beginning. What has appeared to be a significant observation in this series is that the pain of obstruction has a tendency to become established in one portion of the abdomen. Whatever the explanation of this may be, it is important that its position bears not the slightest relation to the position of the obstruction. It is therefore erroneous to assume that the incision for operative surgery should be made, as is stated in many textbooks, at the point of maximum pain. In all the cases studied the obstruction was in the terminal ileum and yet, as shown in the table, the pain was almost as often in the upper part of the abdomen as in the lower part.

A most important characteristic of the pain of low obstruction is its persistence and its severity. In every one of the twenty-five cases reviewed it was necessary to give repeated doses of morphine to relieve the pain of which the patient persistently complained. In some instances this almost constant use of morphine was necessary for as long as five or six days. So constant was this observation that, even in a small series of cases, the conclusion seems justified that postoperative abdominal pain that is so persistent and severe as to require the repeated use of morphine should bring to mind the possibility of obstruction, despite the absence of other symptoms of the disease.

Summary of Results

	Pain					Distention					Flatus		Stools		Vomiting			Duration of Obstruction, Days from Beginning of Symptoms to Death
	Location			Type		Uneven												
Type of Operation	High	Low	General	Cramping	Constant	High	Low	Lateral	Even		Present	Absent	Present	Absent	Present	Absent	Day Noted Before Death	
1. Appendectomy	..	..	+	+	..	..	..	..	+		+	..	+	..	+	..	3	6
2. Colostomy	..	+	..	+	..	..	+	..	..		+	..	+	..	+	..	4	14
3. Hysterectomy	..	+	..	+	..	..	+	..	..		+	..	+	..	+	..	2	7
4. Hysterectomy	+	..	..	+	..	..	+	..	..		+	..	+	..	+	..	18	25
5. Salpingectomy	..	+	..	..	+	+	..	..	..		..	+	..	+	+	..	1	3
6. Inguinal hernia	+	..	..	..	+	..	+	..	..		+	..	..	+	..	+	..	5
7. Salpingectomy	+	..	..	+	..	..	+	..	..		+	..	+	..	+	..	4	13
8. Appendectomy	..	+	..	+	..	+	..	..	..		+	..	+	..	+	..	10	22
9. Hysterectomy	+	..	..	..	+	..	..	..	..		+	..	..	+	+	..	1	5
10. Appendectomy	..	+	..	+	..	..	..	+	..		+	..	+	..	+	..	2	14
11. Colostomy	+	..	..	+	..	..	..	..	+		+	..	+	..	+	..	5	10
12. Appendectomy	..	+	..	..	+	..	+	..	..		+	..	+	..	+	..	6	10
13. Appendectomy	+	..	..	+	..	+	..	..	..		+	..	+	..	+	..	2	8
14. Salpingectomy	..	..	+	+	..	..	+	..	..		+	..	..	+	..	+	..	3
15. Inguinal hernia	..	+	..	+	..	+	..	..	..		..	+	+	..	+	..	2	6
16. Appendectomy	..	+	..	+	..	+	..	..	..		+	..	..	+	+	..	2	9
17. Hysterectomy	..	+	..	+	..	+	..	..	..		+	..	+	..	+	..	5	19
18. Appendectomy	+	..	..	+	..	..	+	..	..		+	..	+	..	..	+	..	6
19. Colostomy	+	..	..	..	+	..	..	..	+		+	..	..	+	..	+	..	4
20. Appendectomy	..	+	..	+	..	..	+	..	..		+	..	..	+	+	..	3	6
21. Appendectomy	+	..	..	+	..	..	+	..	..		+	..	+	..	..	+	..	8
22. Appendectomy	+	..	..	+	..	..	..	..	+		+	..	..	+	+	..	2	6
23. Hysterectomy	..	+	..	+	..	..	..	+	..		+	..	+	..	+	..	1	9
24. Salpingectomy	..	+	..	+	..	..	..	+	..		+	..	+	..	..	+	..	6
25. Appendectomy	..	+	..	+	..	+	..	..	..		+	..	+	..	+	..	2	8
Totals	10	13	2	19	6	7	9	5	4		23	2	17	8	19	6		
Averages																	4.2	8.5

Hyperperistalsis.—Hyperperistalsis accompanies the pain, of course, in the early stages of obstruction. Sometimes it is visible and almost always it is audible if investigated early enough. Once the stage of obstruction has passed, the typical rushing peristalsis disappears and is replaced by the "tinkling" type so frequently associated with peritonitis.

Uneven Distention.—Abdominal distention always accompanies low obstruction. Indeed, it is the only symptom that is always present. Furthermore, it has one characteristic that is almost pathognomonic; viz., its unevenness. There are many who will doubt this and perhaps some who have never seen it. It is, nevertheless, present in practically every case of low obstruction and is without doubt the most valuable single clinical sign that the disease presents.

In the average case the unevenness of the distention is missed either because the attending surgeon does not take the precaution to remove the bandages from the

abdomen and look for the inequality of the distention in a strong cross light or because he takes this precaution too late. It may last a few hours or for a day or more but it must be emphasized that it is essentially an early symptom confined entirely to the stage of obstruction. Once it disappears it never returns. I am not aware of any other type of distention that so consistently bears this characteristic.

Vomiting.—The third most frequent symptom of the stage of obstruction is vomiting. In the twenty-five cases studied, vomiting occurred in nineteen at some time during the course of the disease. In the remaining six cases, vomiting did not occur at any time. There is no particular significance in the fact that approximately 75 per cent of the patients vomited—that is well known—but it is significant that 25 per cent of the patients did not vomit, in fact, did not even have an excess of fluid in the stomach at any time during the course of the disease. In high obstruction, vomiting is almost always if not always present early in the disease and most certainly occurs at some stage. The fact that it may be absent throughout the entire course of low obstruction shows the fallacy of basing the diagnosis of low obstruction on observations made on high obstruction. Of particular significance in this regard is the fact that, with an average duration of the obstruction of 9.5 days, vomiting did not occur until an average of 4.2 days before the death of the patient. Thus it is seen that even in those cases in which vomiting did occur it often either appeared very late in the stage of obstruction or not until the stage of degeneration had probably become established. While conclusions based on statistics obtained from such a small series of cases may be misleading, the implication loses none of its importance in emphasizing the danger of using the symptom of vomiting as a criterion for the diagnosis of low obstruction.

In textbooks, one of the most frequent symptoms given is "obstipation with no passage of gas by rectum." Nothing could be further from the truth. In the twenty-five cases studied, gas was passed by rectum in all but two up to the day of death. In some instances the passage of gas occurred only after the insertion of a colon tube, but in most instances it was passed without its aid. Whether this observation is a peculiarity to this particular series, only more experience will show. It is difficult to believe, however, that such would be the case. Seventeen of these twenty-five patients had bowel movements up to the day of death and in five of these diarrhea was a persistent and troublesome symptom. Since in many instances the so-called bowel movements were liquid stools consisting of material similar to that removed from the stomach, it may be assumed that the obstruction was not complete. It is, of course, highly improbable that postoperative obstruction is ever complete in its inception. However, if one explains the passage of gas and fecal matter in these cases by the assumption that the obstruction was incomplete, one must also recall that all these patients died of their obstruction. Such an assumption is disproved, however, by the fact that, at necropsy, complete obstruction was found in all these cases.

It cannot be too often emphasized that one must not be misled by the relatively good condition of the patient during the stage of obstruction. It is a highly deceptive state that is of absolutely no prognostic value, nor is it in any way reliable as a basis on which to judge the degree of the obstruction.

LABORATORY OBSERVATIONS

With the exception of the well known changes visible in the roentgenogram there are no reliable laboratory evidences of low obstruction that are characteristic of the stage of obstruction. The great value of the x-rays is generally realized but it is obvious that one must at least tentatively diagnose obstruction before the advisability of roentgen examination is apparent. It therefore should not be considered a substitute for careful, vigilant clinical observation. In this connection it may be parenthetically stated that the value of the x-rays in the diagnosis of low obstruction in any of its stages parallels the perfection of the picture.

STAGE OF DEGENERATION

The stage of degeneration is characterized by the appearance of a progressive type of toxemia. Usually the cramplike pain of the stage of obstruction is replaced by a pain more constant and less cramping. Often it is described as a full feeling and it is usually relieved by vomiting or the removal of gastric or duodenal fluid by the stomach tube. The distention is generalized and peristalsis is not visible, and if audible is "tinkling" in character. Sometimes in the very late period of the stage of degeneration the distention apparently decreases. It usually denotes a complete flaccidity and irreparable degenerative changes in the intestinal walls. The typical fluid of obstruction increases in almost direct proportion to the amount of salt solution administered. The progressive toxicity accompanying the stage of degeneration is evidenced at first by periods of delirium, tremor or stupor and often slight cyanosis, all of which temporarily disappear after the administration of salt solution. Later, however, salt solution has no effect on these symptoms.

It is in the stage of degeneration that the laboratory observations assume the characteristics so often quoted as typical of obstruction. The fever rises and the pulse increases. Usually there is an accompanying increase in leukocytes but in some instances a marked leukopenia develops, explanation of which is not clear. The well known decrease in the blood chlorides occurs in the stage of degeneration and is seldom, if ever, present in the stage of obstruction.

TREATMENT

As already mentioned, both the clinical and the pathologic changes that occur in the course of low obstruction suggest the occurrence of two stages in the progression of the disease. Whatever name one may choose to designate these stages is unimportant so long as it is recognized that in one (the stage of obstruction) there is nothing but a local change, while in the other (stage of degeneration) the change involves the entire intestinal tract proximal to the obstruction and is accompanied by serious systemic toxicity. Recognition of this fact is essential to the rational and successful treatment of low obstruction; indeed, it is the very essence of its therapy.

Assuming the correctness of this conception of low obstruction, it becomes obvious that once the stage of degeneration is established the chances for successful results from any type of therapy decrease as the stage of degeneration progresses. It is because most of the surgery for low obstruction has been performed in this stage that in the minds and in the experience of many it is not only ineffectual but actually dangerous. Release of the obstruction in this stage is not only performed on a patient severely poisoned by the toxins accom-

panying the intestinal changes, is not only attempted on intestinal loops that are friable, tremendously dilated and atonic, but ceases to be a method of relieving the existing pathologic condition. The primary obstruction has been superseded by the secondary intestinal change and as a result has become a secondary item in the general therapeutic problem. Instead of treatment being directed to the comparatively simple mechanical problem of relieving the obstruction, one has in addition the almost insurmountable problem of restoring to physiologic function cells that have apparently begun to degenerate.

Therapeutic attention must therefore be mainly directed to the stage of obstruction, for it is here that the greatest chance for success lies. In this stage there are two methods of treatment that have various advocates; viz., (1) decompression of the dilated loops either by the Witzel tube (enterostomy) or continuous suction drainage through a duodenal tube and (2) relief of the obstruction by surgical means.

It has been repeatedly shown that the Witzel tube will drain but a small area of the intestine unless active peristalsis is present. It is evident that it is, however, usually employed in the stage of degeneration; for it is only in this stage that great amounts of fluid are formed and it is to remove the fluid that the tube is used. Furthermore, at this time the intestine is dilated, filled with fluid, and the "patient too sick to withstand more surgery"—a stage in which peristalsis, if present at all, becomes rapidly less active and soon disappears altogether. The suction duodenal drainage while more efficacious than the Witzel tube, obviously cannot possibly cure a complete obstruction. As both a preoperative and a postoperative measure or as a last hope measure in late cases, both procedures are of value in one way or another but neither is a substitute for surgery.

In low obstruction both methods have apparently saved certain patients and most patients have been benefited by their use. I think, however, that study will show that neither ever cured a persistent obstruction and I have no doubt that persistence in their use has often resulted in the attending surgeon waiting so long as to preclude success in subsequent surgical treatment.

Wangensteen and Paine [1] in their description of the treatment of obstruction by continuous duodenal drainage recognize its limitations. They clearly intimate that it is not a substitute for surgery and emphasize that it must be accompanied by careful observation to determine how long it may justify a delay for surgery. The method, so long as it is used with full realization of its purposes and its limitations, is a valuable aid in the treatment of low obstruction. The surgeon who persists in its use should realize that he is assuming that the existing obstruction is of the type that will spontaneously disappear and in so doing assumes greater responsibility than the surgeon who subjects his patients to early operation for relief of the obstruction.

In the experience of many, the treatment of low obstruction by surgery has produced disappointing results. This is due, in the majority of cases, to the fact that surgery has been too long delayed. It is a safe assumption that the average patient with low obstruction is operated on several days after the stage of degeneration has become established. This statement is based not only on personal observation and personal experience but on the fact that in the literature on the subject one finds frequent comments concerning "the desperately ill condition of the patient" and "the extreme friability of the obstructed intestinal loops," both of which are characteristic of the stage of degeneration but do not occur in the stage of obstruction. In the surgical treatment of low obstruction there are, however, certain details in technic which should be assiduously followed. The incision should be amply large and should be so placed as to give adequate exposure to all parts of the abdomen. In postoperative cases it is usually best to go through the former incision, since in all likelihood the obstruction has occurred at the site of operation. In order to get adequate exposure, complete relaxation, such as that obtained by spinal anesthesia, is essential. The continuous pulling and fumbling of the obstructed loops that occur when the incision is too small or the abdominal muscles are not fully relaxed is of serious moment and may, as the result of the shock it produces, be the direct cause of death.

CONCLUSION AND SUMMARY

If the observations in this series of cases are substantiated by those in similar studies, the fact seems evident that improvement in the treatment of low obstruction depends primarily on improvement in its early diagnosis. As far as it is possible at present to tell, improvement in the diagnosis must come from a detailed study of the symptoms and clinical behavior of a large series of uncomplicated cases of low obstruction rather than from the development of some more or less specific laboratory device. It is clear, I think, that such studies of low obstruction must be predicated on the assumption that the onset, the progression and the symptoms of low obstruction differ in an important degree from those of high obstruction and that, therefore, the two types of obstruction must be considered separately.

In the separate consideration of low obstruction it seems clear that it is both possible and logical to divide the disease into two stages. Since the first stage seems to be limited to only the mechanics of obstruction and to be accompanied by few evidences of any particular harm to the patient, it seems logical to designate it as the stage of obstruction. It also seems reasonable to designate the second stage as the stage of degeneration, since the gross pathologic changes in the obstructed intestinal loops seem to be of a degenerative nature and to be accompanied by toxic symptoms more or less characteristic of degeneration. The fact that the clinical manifestations of obstruction consistently parallel the pathologic changes in the obstructed loops suggests their close relationship and justifies estimation of the pathologic changes by the clinical observations.

In view of the comparative condition of the obstructed loops in the two stages of low obstruction, it is apparent that therapeutic endeavor should be largely directed to the stage of obstruction. In this period one has only to deal with a mechanical blocking of the normal flow of intestinal fluid, and there seems to be no serious change in the physiology of the cells comprising these obstructed loops. In the stage of degeneration, however, the comparatively simple problem of the relief of the obstruction is complicated by the supervention of serious and often advanced changes in the walls of the major portion of the small intestine. Indeed, by initiating treatment in this stage one may be

1. Wangensteen, O. H., and Paine, J. R.: Treatment of Acute Intestinal Obstruction by Suction with the Duodenal Tube, J. A. M. A. **101**: 1532-1538 (Nov. 11) 1933.

attempting to restore to physiologic function cells that are already necrobiotic.

One of the earliest and perhaps the only specific symptom of the stage of obstruction is uneven distention. There are, no doubt, many who do not agree that uneven distention is an almost constant accompaniment of low obstruction. Though further observations are needed to demonstrate the correctness of this assumption, it is necessary to emphasize the fact that uneven distention occurs very soon after the onset of low obstruction, that it is present for a short time only, and that it must be searched for to be found. The average surgeon looks on postoperative pain and distention as an expected consequence of abdominal surgery and as a rule, therefore, pays it little attention. It is useless to expect uneven distention after the stage of degeneration has begun, for by that time the distention has become and will remain generalized; it is also useless to expect to discover the unevenness of the distention at any time unless all postoperative dressings are removed and a clear, unobstructed survey of the abdomen is made in a good cross light.

The symptoms of vomiting and "obstipation with no passage of gas by rectum," as frequently quoted in textbooks, are unreliable criteria on which to base the early diagnosis of low obstruction. While vomiting usually occurs at some time during the course of the obstruction, it is often absent in the stage of obstruction and, in fact, may not even occur in the stage of degeneration. It is unfortunate that because it is a constant accompaniment of high obstruction it should be thought necessary for the diagnosis of low obstruction.

However detailed one's analysis of the symptoms may be, the first essential in the diagnosis of low obstruction is that the possibility of its presence be kept in mind. It is perhaps the failure to do this that allows many of the diagnostic signs and symptoms to slip by without eliciting the careful consideration on which their proper evaluation depends. When the stage of degeneration has become established and the suggestive, if not characteristic, symptoms have passed unnoticed, one encounters the most difficult task of deciding whether or not the now generalized distention, the fever, the increased leukocytosis and the decreased or absent peristalsis are the result of peritonitis or obstruction. Certainly the high mortality attending low obstruction should dispel any ideas as to its being easy to manage and should stimulate a constant, informed and alert vigilance.

Any attempt to differentiate between partial and complete obstruction carries with it a grave responsibility. Unfortunately, it is not as simple as it may seem. The clinical criterion on which the diagnosis of partial obstruction is based is the passage of gas and fecal matter by rectum. Wangensteen and Paine contend that it can also be made by the roentgenographic detection of gas in the large bowel below the site of obstruction. The danger, if not the fallacy, of this criterion is shown by the fact that all but two of the patients included in this study passed gas up to the day of death. The obstruction was proved to be complete in all these cases by necropsy.

The conclusion seems logical that in most instances the treatment for low intestinal obstruction is essentially the surgical release of the obstructing lesion. Continuous suction drainage and enterostomy should be considered adjuncts to surgery rather than its substitute. The persistent use of continuous duodenal drainage or the prolonged confidence in the efficiency of drainage by enterostomy is necessarily accompanied by the responsibility for the assumption that the obstruction will spontaneously disappear. Only those whose experience with low obstruction has been very limited fail to recognize the magnitude of this responsibility. The dictum of early operation has been established by the experience of a great number of competent surgeons, but to this must be added the necessity for constant study and vigilance directed to the early diagnosis of low obstruction. Operation in the stage of obstruction should be followed by a definite decrease in the mortality of low intestinal obstruction.

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QUININE AND ERGOT ALLERGY AND THROMBOCYTOPENIC PURPURA

REPORT OF A CASE

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The clinical entity essential thrombocytopenic purpura (idiopathic or primary purpura haemorrhagica) is a condition of unknown etiology. A similar condition of known etiology is referred to as secondary or symptomatic thrombocytopenic purpura. Both these forms of purpura manifest a general hemorrhagic tendency, and the conspicuous feature is a definite diminution of the blood platelets. From the standpoint of treatment it is important therefore to determine if possible, by careful investigation, the exciting causative factor of thrombocytopenia.

It is well to recall that there is also a number of conditions in which purpura occurs in the absence of a general hemorrhagic tendency and diminution of platelets. These purpuras according to Christian,[1] can be classified into essential (idiopathic) and secondary (symptomatic) nonthrombocytopenic purpura. The term purpura implies cutaneous hemorrhage. One of the important and clinically interesting subgroups of essential nonthrombocytopenic purpura is the so-called anaphylactoid purpura,[2] which includes the Schönlein-Henoch group and the Osler erythema group of skin lesions with visceral manifestations. Osler[3] and Johannessen,[4] among others, have commented that it seemed logical that an anaphylactic (allergic) reaction is responsible for the symptoms of essential purpura and serum sickness. Recent studies indicate that in this form of purpura there is a true allergy. Landsberger[5] reported a case of purpura in an infant in whom cow's milk was the allergic offender. Alexander and Eyermann[6] cited nine cases of Henoch's purpura due to food allergy. Barthelme[7] and Kahn,[8] among

1. Christian, H. A.: Oxford Loose-Leaf Medicine, New York, Oxford University Press **2**: 233, 1921.
2. Frank, E.: Berl. klin. Wchnschr. **52**: 454, 1915.
3. Osler, William: Brit. M. J. **1**: 517, 1914.
4. Johannessen, C.: Purpura, Norsk mag. f. lægevidensk. **79**: 1209 (Nov.), 1336 (Dec.) 1918.
5. Landsberger, M.: Allergy to Cow's Milk in Infant with Purpura, Ztschr. f. Kinderh. **39**: 569, 1925.
6. Alexander, H. L., and Eyermann, C. H.: Food Allergy in Henoch's Purpura, Arch. Dermat. & Syph. **16**: 332 (Sept.) 1927; Allergic Purpura, J. A. M. A. **93**: 2092 (June 22) 1929.
7. Barthelme, F. L.: Allergic Purpura (Henoch's), J. Allergy **1**: 170 (Jan.) 1930.
8. Kahn, I. S.: Henoch's Purpura Due to Food Allergy, J. Lab. & Clin. Med. **14**: 835 (June) 1929.

others, also reported cases of Henoch's purpura due to food allergy. In each instance it was demonstrated that hemorrhage into the skin and other associated symptoms of Henoch's purpura were caused by the ingestion of particular foodstuffs.

Cases of purpura have been reported following a variety of drugs. Most commonly mentioned are aniline, iodine, pyridine, mercury, quinine, belladonna, ergot, acetphenetidin, salicylic acid and arsphenamine preparations. Probably most of these are nonthrombocytopenic purpura, but in some cases hemorrhagic purpura developed with a low platelet count following use of an arsphenamine preparation, as in the cases reported by Thill,[9] among others. Rosenthal,[10] however, stated that besides arsphenamine such substances as benzene, aniline and quinine may poison the bone marrow in such a manner as to produce thrombocytopenia. It is evident from a survey of the literature that the vast majority of the cases of purpura due to drugs were considered from the point of view of a poison, and correctly so, because of the lack of evidences of their allergenic nature.

The striking improvement that follows splenectomy, especially in cases of the chronic form of essential thrombocytopenia, first reported by Kaznelson,[11] is not obtained with any like degree in the cases of symptomatic thrombocytopenia. This improvement takes place even in the presence of a platelet count as low as before the operation. Hence the proper grouping of all types of purpura, particularly thrombocytopenia, is extremely important and necessary for correct treatment.

The following report of a case is warranted not only because of its clinical interest but also because a definite causal allergic relationship between such drugs as ergot and quinine and thrombocytopenic purpura has been established.

REPORT OF CASE

H. R., a mulatto woman, aged 29, a waitress, unmarried, a native of the British West Indies, seen by one of us (M. M. P.) for allergic study, Feb. 27, 1933, had a history of bleeding from the gums and vagina along with large blotches under the skin, which occurred for the first time at the age of 14 years following the oral administration of some "drugs." She suspected pregnancy at that time.

Infancy and childhood had been normal except for some of the childhood diseases and "malaria, which everybody is supposed to have had." Quinine had been liberally administered with apparent tolerance.

The family history was negative to allergy.

At the age of 20 years the patient had taken only four doses of fluidextract of ergot, each dose containing 4 Gm. of the extract, at intervals of four hours, because of suspected pregnancy. The following day hemorrhage into the skin and mucous membranes occurred and persisted for nine days. In 1927 she complained for seven months of being "run down," with symptoms of numbness and tingling of the lower extremities, abdominal pains and backache. Her physician decided to administer a course of "tonic injections." The day following the first and only injection, profuse bleeding began from the gums and mucous membranes of the mouth and purpuric spots appeared on both legs. Although she had just completed a menstrual period, bleeding began anew. Several days later blood appeared in the stools and urine. Sept. 9, 1927, one week after the onset of symptoms, she was admitted to Fordham Hospital. The report of the positive observations at examination then showed bleeding from the mouth, with congestion of the pharyngeal and buccal mucosa, and on the left side near Stenson's duct there were two ulcerations surrounded by a blood clot. On palpation the abdomen was tender throughout, with some localization in the region of the left lower quadrant. The stools on gross examination were tarry, while the microscopic examination revealed numerous red blood cells and no ova or parasites.

November 14, examination of the blood showed the bleeding time to be three minutes and coagulation time four minutes, along with an absence of clot retraction and a platelet count of 130,000. November 22 the bleeding and coagulation times were three and one-half and four minutes, respectively, and the platelet count was 142,000. On admission to the hospital the white blood cell count was 5,600 and the red cells numbered 1,800,000. Subsequent examinations of the blood showed gradual improvement and on November 26 the red cell count was 3,000,000 and hemoglobin of 70 per cent. Chemical examination of the blood showed: nonprotein nitrogen, 42 mg.; creatinine, 1.4 mg., and sugar, 105 mg. per hundred cubic centimeters. Roentgen examination of the bones of the lower extremities revealed no abnormalities. The blood pressure remained around 115 systolic and 60 diastolic. The medication consisted of the oral administration of calcium lactate and the hypodermic injection of iron cacodylate.

Discharged from the hospital, December 6, the patient was seen for the first time by one of us (J. A. M.) on December 13, suffering from bloody vaginal discharge and bleeding gums. Treatment was symptomatic and all bleeding ceased, December 18. She was again seen, Jan. 13, 1928, when she manifested all the signs of a hemorrhagic purpura. The treatment consisted of calcium lactate medication, local iodine application and ultraviolet irradiation. Bleeding ceased, January 18, but the treatment was continued for one month, the patient being discharged as cured, February 18.

The patient seemed well from 1928 until Feb. 8, 1933, when she took of her own volition in the course of one day, 0.65 Gm. (10 grains) of quinine sulphate with eight capsules of ergot (the dosage being unknown) for "delayed menstruation." That night bleeding from the gums and vagina with purpura ensued. She passed many blood clots from the vagina for two days. February 10 she was seen by one of us (J. A. M.), who sent the patient to Sydenham Hospital[12] for study. On admission the temperature was 101.4 F. and the pulse rate 110. Physical examination revealed numerous ecchymotic areas and petechiae over the body involving particularly the skin on the chest and axillae. Both eyes showed a few patches of subconjunctival hemorrhages. There were dried clots of blood and free bleeding from the gums and mucous membranes of the lips and vagina.

On the morning of February 10 the blood picture showed a hemoglobin of 60 per cent; red blood cells, 2,810,000; white blood cells, 10,450; segment forms, 65 per cent; band forms, 26 per cent; small lymphocytes, 7 per cent; monocytes and eosinophils, each 1 per cent; platelets, 130,000; coagulation time, four minutes; bleeding time, eight minutes. There were present some toxic granules, achromia and microcytosis. In the evening the red blood cells were 3,180,000; white blood cells, 8,100 and platelets, 100,000. February 14, the hemoglobin was 65 per cent; red blood cells, 3,180,000; white blood cells, 11,000; segment forms, 45 per cent; band forms, 4 per cent; small lymphocytes, 37 per cent; monocytes, 7 per cent; eosinophils, 6 per cent. The microscopic appearances of the cells remained unchanged.

Examination of the urine, February 13, showed only a faint trace of albumin and from 10 to 15 red blood cells per low power field, and on February 14 the red blood cells ranged from 25 to 80 per low power field.

February 16 the patient was discharged from the hospital as "cured." Her condition was diagnosed as purpura haemorrhagica and intra-uterine gestation.

February 20 the patient had taken only three doses of 4 cc. (1 fluidrachm) each of elixir of iron, quinine and strychnine (N. F.) (each dose containing about 0.03 Gm. [0.5 grains] of quinine hydrochloride). Bleeding commenced that night and lasted for two days. The patient was readmitted to Sydenham Hospital and on March 2 a therapeutic abortion was performed.

9. Thill, O.: Akuter Morbus Werlhof nach Myosalvarsanbehandlung, Ztschr. f. klin. Med. **100**: 285, 1928.

10. Rosenthal, N., quoted by Musser, J. H., and Wintrobe, M. M., in Tice, Frederick: Practice of Medicine, Hagerstown, Md., W. F. Prior Company **6**: 887, 1933.

11. Kaznelson, P.: Wien. klin. Wchnschr. **24**: 1451, 1916.

12. Gynecologic service of Dr. Alfred M. Hellman.

March 7, examination of the blood showed a hemoglobin of 69 per cent; red cells, 3,500,000; white cells, 6,050; segmented forms, 40 per cent; band forms, 2 per cent; small lymphocytes, 48 per cent; monocytes, 8 per cent; eosinophils, 2 per cent; coagulation time, four and one-half minutes, and bleeding time, two and one-half minutes. August 1, when the patient was feeling well and was employed in her usual occupation, the blood picture showed a hemoglobin (Sahli) of 75 per cent; red cells, 4,400,000; white cells, 6,800; segmented forms, 46 per cent; lymphocytes, 46 per cent; monocytes, 6 per cent; eosinophils, 2 per cent; platelets, 240,000; bleeding time, two and one-half minutes; coagulation time, five minutes; and slight hypochromia.

Allergy Studies: The cutaneous tests with ergot, quinine alkaloid and quinine salts were performed and repeated at varying intervals with the following results:

Powdered ergot alkaloid and fluidextract of ergot showed negative reactions with the scratch test. A 1:50 solution of powdered ergot alkaloid extracted in buffered solution also showed negative reactions with the intradermal and passive transfer tests. (It is common knowledge that a person can be definitely allergic and yet be negative to cutaneous tests.)

The scratch test [13] with quinine alkaloid, 10 per cent hydrochloric acid and alcohol being employed as diluents, showed positive reactions ranging from one-plus to two-plus.[14] Quinine sulphate (1 Gm. of the salt is soluble in 30 cc. of glycerin) showed a plus-minus reaction and quinine salicylate (1 Gm. of the salt is soluble in 14 cc. of alcohol) showed a one-plus reaction. The water soluble quinine salts, such as the hydrochloride, dihydrochloride and bisulphate, all gave three-plus reactions. The intradermal test with a 1:50 extract of quinine alkaloid (10 per cent hydrochloric acid being used as the extracting fluid) showed a three-plus reaction, the body of the wheal measuring 1.5 cm. in diameter from which pseudopodia spread in all directions. The control with the extracting fluid was negative. When buffered solution was used as an extracting fluid, only a one-plus reaction was obtained. The quinine alkaloid and quinine salts are levorotatory. The dextrorotatory quinine derivatives, quinidine alkaloid and quinidine sulphate (soluble in alcohol) showed negative cutaneous (scratch and intradermal technics) reactions. Passive transfer tests with a 1:50 extract of quinine alkaloid by the intradermal technic and with quinine dihydrochloride by the scratch test, each showed a one-plus reaction.

March 29, 0.65 Gm. (10 grains) of quinidine sulphate along with 0.001 Gm. (1/60 grain) of strychnine sulphate and 1 cc. (15 minims) of tincture of ferric chloride were orally administered without inducing any untoward symptoms.

Feb. 10, 1934, the patient was entirely well and the examination of the blood showed a hemoglobin of 83 per cent; red cells, 4,320,000; white cells, 6,000; segmented forms, 54 per cent; band forms, 2 per cent; small lymphocytes, 36 per cent; monocytes, 4 per cent; eosinophils, 4 per cent; platelets, 210,000; bleeding time, three and one-half minutes; coagulation time, seven and one-half minutes.

GENERAL CONSIDERATIONS

The characteristics of the acute and chronic forms of thrombocytopenic purpura are hemorrhages from the mucous membranes, petechiae or ecchymoses of the skin, a prolonged bleeding time, a normal or slightly retarded coagulation, a nonretractile clot and a reduced platelet count, which seems to be the most important feature of the condition. The nonthrombocytopenic purpura group is manifested by disturbances in the skin, joints and internal viscera, especially the gastrointestinal tract. Morphologically the blood is unchanged from normal; the blood platelets are unchanged.

13. Fred Boerner, Jr. (A Skin Reaction to Quinine, J. A. M. A. **68**: 907 [March 24] 1917) first described the scratch test with quinine sulphate. This author and one of his colleagues showed intolerance to quinine administered orally, manifested by symptoms of erythema and intense itching of the skin. Skin reactions on control individuals were negative. At that time, Boerner maintained the positive skin reaction to quinine to be specific and of an allergic nature.

14. Peshkin, M. M., and Fineman, A. H.: Asthma in Children: VI. A Comparative Study of the Scratch and Intradermal Methods of Skin Testing, Am. J. Dis. Child. **36**: 815 (Nov.) 1927.

Platelet deficiency in thrombocytopenia was described in 1881 by Brahm,[15] in 1887 by Denys,[16] and in 1895 by Hayem.[17] Similar studies with additional features of the condition have been made by Bensaude and Rivet,[18] Duke,[19] Pratt [20] and Minot,[21] among others. Von Behring [22] and Lee and Vincent [23] have observed in thrombocytopenia experimentally produced in animals that the platelets disappeared from the peripheral circulation and tended to clump in the internal organs during anaphylactic shock. It has also been shown that the coagulation time in anaphylactic shock is delayed. Whether this process is comparable to the allergic phenomenon observed in cases of allergic thrombocytopenia is not known. Musser and Wintrobe [24] state that thrombocytopenic purpura may very rarely occur as part of an anaphylactic reaction. Christian includes anaphylaxis in his classification of purpura as one of the causes of secondary thrombocytopenic purpura.

Some Alkaloids of the Cinchona Group with Their Corresponding Dextrorotatory Isomers

Levo-Isomer	Corresponding Dextro-Isomer
Quinine	Quinidine
Cinchonidine	Cinchonine
Hydroquinine	Hydroquinidine
Hydrocinchonidine	Hydrocinchonine
Ethylhydrocupreine	Ethylhydrocupreidine
Hydrocupreine	Hydrocupreidine
Ethylquitenine	Ethylquitenidine

Sergent and his associates [25] reported a case of proved thrombocytopenia in a young girl in whom blood transfusions, irradiation of the spleen and the administration of various drugs and solution of pituitary brought no improvement. However, the injection of 0.001 Gm. of epinephrine hydrochloride daily resulted in a "cure." After the administration of epinephrine hydrochloride the spleen contracted for from six to seven minutes, which expresses its blood content, leading to definite hyperglobulia lasting for from twenty to twenty-five minutes. The authors then suggested from these observations that there may possibly be some failure of the suprarenals, forgetting, however, that the exciting etiologic factor may have been allergic in nature.

Brinnitzer [26] believes that certain relations between anaphylaxis and thrombopenia show that a differentiation of hemorrhagic purpura from the anaphylactoid purpura group is not possible and that probably

15. Brahm and Krauss: Inaug. Diss., Heidelberg, 1883, cited by Leschke and Wittkower.

16. Denys, J.: Etudes sur la coagulation du sang, Cellule **3**: 445, 1887.

17. Hayem, G.: Du purpura, Presse méd. **3**: 233, 1895.

18. Besnaude, R., and Rivet, L.: Les formes chroniques du purpura hémorrhagique; poussées indéfinies et réveils à longs intervalles; rapports de certains cas avec la tuberculose, Arch. gén. de méd. **1**: 193, 272, 1905.

19. Duke, W. W.: The Pathogenesis of Purpura Haemorrhagica, with Especial Reference to the Part Played by Blood Platelets, Arch. Int. Med. **10**: 445 (Nov.) 1912; The Relation of Blood Platelets to Hemorrhagic Disease, J. A. M. A. **55**: 1185 (Oct. 1) 1910.

20. Pratt, J. H., in Osler, William, and McCrae, Thomas: Modern Medicine, Philadelphia, Lea & Febiger **4**: 687, 1915; A Critical Study of the Various Methods Employed for Enumerating Blood Platelets, J. A. M. A. **48**: 1999 (Dec. 30) 1905.

21. Minot, G. R.: Studies on a Case of Idiopathic Purpura Haemorrhagica, Am. J. M. Sc. **152**: 48 (July) 1916. Lee, R. I., and Minot, G. R.: The Significance of Blood Platelets, Cleveland M. J. **16**: 65 (Feb.) 1917.

22. von Behring, E.: Experimentelle Analyse und Theorie der anaphylaktischen und apotoxischen Vergiftung, Deutsche med. Wchnschr. **40**: 1857, 1914.

23. Lee, R. I., and Vincent, B.: A Study of the Effect of Anaphylaxis and Leech Extract on the Coagulation of the Blood, J. M. Research (N. S.) **27**: 445, 1915.

24. Musser, J. H., and Wintrobe, M. M., in Tice, Frederick: Practice of Medicine, Hagerstown, Md., W. F. Prior Company **6**: 887, 1933.

25. Sergent, Durand, Grellety-Bosviel and Benda: Purpura hémorrhagique et adrénaline, Progrès méd. **55**: 1917 (Nov. 30) 1927.

26. Brinnitzer, H. N.: Purpura Haemorrhagica with Allergic Reaction to Maternal Blood of the Same Blood Group, Ztschr. f. Kinderh. **51**: 566, 1931.

anaphylaxis is one of the many factors that etiologically are responsible for the thrombopenic purpura. He reports the case of thrombopenia in a boy, aged 4 years, with blood platelets of 20,000 who developed angioneurotic edema and generalized urticaria ten minutes after receiving a blood transfusion from the mother, whose blood grouping was the same as her child. One month later the blood transfusion was repeated with similar results. This case appears to indicate that the strong anaphylactic reaction to the maternal blood belonging to the same group was due to the anaphylactic feature of the thrombopenic purpura in the child.

COMMENT

Sensitization to drugs inducing various manifestations of allergy has been shown to occur in cases in which such small doses were used as to preclude the possibility of any toxic or even discernible pharmacologic action. Asthma and vasomotor rhinitis have been induced by the inhalation of ipecac,[27] rhubarb, lycopodium [28] and castor bean,[29] and by the ingestion of any of a large list of drugs, including even the synthetic chemicals such as acetylsalicylic acid, phenobarbital, amidopyrine and antipyrine. The other allergic conditions caused by the ingestion of drugs are generalized erythema, urticaria, angioneurotic edema, abdominal colic and eczema.[30]

It has been generally known that various drugs can cause nonthrombocytopenic purpura and even thrombocytopenic purpura. The patients were regarded as suffering either from an overdose or from the poisonous effect of the drug. It is not generally known that purpura in some of these cases is really due to drug allergy. A case of quinine hypersensitivity causing thrombocytopenia was recently reported by Maritschek and Markowicz.[31] The patient was a man, aged 35, who had suffered from "quinine intoxication" during treatment for malaria, fifteen years prior to coming under observation. The intoxication at that time manifested itself in purpura and hemorrhages from the mucosae. There remained a persistent hypersensitivity to quinine, so that even small doses (0.3 Gm.) produced severe thrombocytopenia. Sensitization tests were not performed.

Quinine is one of the important and useful drugs employed in therapy. Quinine alkaloid is present in various quinine salts, ranging from 20 per cent in quinine tannate to 81.8 per cent in quinine hydrochloride.[32] In the treatment of malaria, Fletcher [33] found that quinidine and cinchonine are quite comparable to quinine in their effects on malarial parasites. If a patient cannot take quinine, one of these dextrorotatory alkaloids can be given and as demonstrated in the case herein reported, without ill effects. This substitution also eliminates the uncertain and dangerous process of hyposensitization to quinine. Dawson and Garbade [34] reported positive skin reactions only to the levo-isomers of the cinchona group in a patient in whom 0.325 Gm. (5 grains) of quinine sulphate caused symptoms of intense urticaria, alarming dyspnea and abundant nasal discharge. These authors conveniently arranged the various alkaloids of the cinchona group in the accompanying table.

Positive evidences of ergot and quinine allergy caused by ingestion in the same patient inducing symptoms of thrombocytopenia, with positive skin and passive transfer reactions only to quinine (levorotatory) group, assumes vast importance, because it carries the inference that drug and other allergenic substances probably enter into the etiology of thrombocytopenia more frequently than the few scattered reports in the literature would indicate.

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27. Peshkin, M. M.: Ipecac Sensitization and Bronchial Asthma, J. A. M. A. **75**:1133 (Oct. 23) 1920.
28. Peshkin, M. M.: Bronchial Asthma and Other Allergic Manifestations in Pharmacists, J. A. M. A. **82**:1854 (June 7) 1924.
29. Berntron, H. S.: Occupational Sensitization to the Castor Bean, Am. J. M. Sc. **165**:196 (Feb.) 1923.
30. Unger, Leon: Drug Idiosyncrasy, J. Allergy **3**:76 (Nov.) 1931.
31. Maritschek, Moriz, and Markowicz, Heinrich: Hypersensitivity to Quinine with Purpura Haemorrhagica, Especially in the Upper Air and Food Passages, Monatschr. f. Ohrenh. **67**:410 (April) 1933.
32. Solis-Cohen, Solomon, and Githens, T. S.: Pharmacotherapeutics, Materia Medica and Drug Action, New York, D. Appleton & Co., 1928.
33. Fletcher, William: Notes on the Treatment of Malaria with the Alkaloids of Cinchona, London, John Bale Sons & Danielsson, Ltd., 1928.
34. Dawson, W. T., and Garbade, F. A.: Idiosyncrasy to Quinine, Cinchonidine and Ethylhydrocupreine and Other Levorotatory Alkaloids of the Cinchona Series; Preliminary Report, J. A. M. A. **94**:704 (March 8) 1930.

CYANIDE ANTIDOTES

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Successful chemical antidotes in the treatment of experimental cyanide poisoning are methylene blue, sodium nitrite, triose and sodium thiosulphate. Within limitations, all these agents, except triose, which has not been tried in man, have a demonstrated clinical usefulness. Their actions are both protective and resuscitative. Differing as they do chemically and physically, these agents might also be expected to mediate their antidotal actions differently. This is probably true for simple physical and biologic systems, but in mammals matters appear to be different, and even among different mammals. For instance, in some species (dogs) methylene blue and sodium nitrite are reported to act through the same mechanism which does not seem to be invoked in others (rabbits). Triose and thiosulphate appear to act differently from the dye and nitrite. The newer concepts and apparent complications in these antidotes ought to be understood and explained, if possible, for a proper appreciation and application of the newer treatment of cyanide poisoning.

Interestingly, there have been for many years suggestive data in the literature of pharmacology, which have recently been found valuable for this purpose. Now, they are the basis of practical life-saving measures in this desperate poisoning. At the same time there is a large interest in the fundamental action of the novel antidotes for physiologic processes in general. The latter is quite natural, for, in large measure, these agents were originally the means to fundamental considerations of biologic processes, and their practical use in treatment of cyanide poisoning was not even mentioned. A brief summary of the essential historical facts will indicate the development of these various interests:

For instance, Heymans and Maigre[1] of Ghent demonstrated in 1921 that methylene blue saved dogs from the cyanide poisoning of malonitrile, this being done in connection with

From the Department of Pharmacology, Stanford University School of Medicine.
Read before the Society for Experimental Biology and Medicine, Pacific Coast Branch, Feb. 14, 1934.
1. Heymans, C., and Maigre, E.: Compt. rend. Soc. de biol. **85**:141, 1921.

metabolic studies of this dye. Then Sahlin,[2] in 1926, showed that methylene blue possessed an antitoxic action in poisoning from sodium cyanide in mice. However, Sahlin feared a possible poisoning action from methylene blue itself, which would preclude its use as a practical antidote. Finally Eddy,[3] in 1930, conclusively demonstrated its life-saving and respiratory resuscitative actions in dogs, this too being done in connection with fundamental studies of respiration. But in none of these reports was there a definite suggestion of the possible clinical usefulness of methylene blue in cases of cyanide poisoning until Geiger,[4] in 1932, acting on the advice of one of us,[5] actually treated with success a clinical case of poisoning and confirmed the experimental results. Since that time, several other cases of cyanide poisoning have been successfully treated.[6]

Forty years ago, i. e., in 1893, Heinrich Szigeti[7] of Budapest demonstrated the presence in living animals of "cyanhematin," which really was cyanmethemoglobin, after injection of cyanide in dogs previously treated with potassium chlorate, nitrobenzene, and the like, until their blood was chocolate colored from methemoglobin. He showed that cyanmethemoglobin cannot occur in living animals without first producing methemoglobin. However, it remained for the pharmacologist Enrique Hug[8] of Rosario, Argentina, to demonstrate the practical usefulness of sodium nitrite in cyanide poisoning. According to Hug, its virtue rests on its power to form methemoglobin, which it does more effectively than do potassium chlorate and nitrobenzene, originally tried by Szigeti. Hug[9] has gone further and shown that, in mammals, apparently all methemoglobin formers, among which is included methylene blue, act as cyanide antidotes. Thus, the dye and the nitrite would act as antidotes through a common mechanism, which converts the cyanide to the innocuous cyanmethemoglobin. Wendel[10] has expressed a similar view.

The detoxicating action of sugar in cyanide poisoning has long been known, from fascinating tales in fiction to authentic reports in entomology and toxicology. From extensive comparisons of different sugars in this poisoning, Forst[11] has shown that only triose, or glycerinic aldehyde, has resuscitative actions after the symptoms of toxicity are developed. The chief basis for the antidotal action of sugars is the direct formation of a nontoxic cyanhydrine, although Forst believes that triose is assisted by actions on higher centers. Triose is comparatively poor in mixtures with cyanide in vitro and as a protective for animals, while some other simpler sugars excel in these respects. This indicates certain complications which require careful consideration in selecting antidotes for use in the treatment of poisoning. Dihydroxyacetone may be considered in the saccharin category but is not comparable to triose as to efficiency in developed poisoning, although it may increase the effectiveness of thiosulphate.[12]

Thiosulphate, of course, has long been recognized as a direct oxidant of cyanide, which is converted to the nontoxic sulphocyanate, and is successful as an antidote provided the thiosulphate is injected just before or together with the cyanide. This makes it of little or no practical value in treatment of cases of poisoning. However, Hug[9] and Chen, Rose and Clowes[14] have proposed combining it with other more potent and lasting antidotes, such as nitrite, in order to increase the efficacy of the treatment. According to these authors there is a potentiation of antidotal action under these conditions. Colloidal sulphur and sodium tetrathionate belong with thiosulphate, but the former is erratic in action and the latter offers no particular advantage over thiosulphate.

From this brief consideration of the historical background for cyanide antidotes, certain claims and data are worthy of confirmation and correlation. For instance, claims for the efficiency of nitrite, of triose, and of the mixture of nitrite and thiosulphate, and for the unity of the methemoglobin mechanism for methylene blue and nitrite should be verified. Such a discrepancy as the failure of methylene blue and nitrite to act as cyanide antidotes in rabbits, in the face of successes in other mammals and in birds, ought to be clarified, if possible. Otherwise justifiable doubt of the value of these antidotes might persist and confuse attempts at improving the treatment of cyanide poisoning. These questions are considered in this paper, which embodies results on different animals and on blood.

The general purpose was to determine the effects of typical antidotes on blood directly in vitro, on blood after intravenous injection, and on the blood, symptoms and outcome of poisoning after surely fatal doses of cyanide. The blood was examined for changes in oxygen capacity and for the presence of methemoglobin, chiefly after successful antidotes, but also to some extent after the ineffective agents. The blood changes were compared with the antidotal effects for possible determination of the mechanism of action. The antidotal efficiency was tested in both protective and resuscitative treatments. In the former, the antidote was injected first, and ten minutes later a fatal dose of cyanide, both injections being made intravenously. In the latter type of treatment the cyanide was first injected intramuscularly and then the antidote was injected intravenously, as soon as convulsions were manifested; that is, immediately on the development of definite symptoms of poisoning. The dose of sodium cyanide used was 3 mg. per kilogram of body weight, which was a surely fatal dose for all animals, whether injected intravenously or intramuscularly. This dose of cyanide caused the typical violent symptoms of poisoning in all untreated animals. Convulsions were definite in from ten to fifteen seconds and death occurred in one minute after intravenous injection, and symptoms occurred in about one minute and death in from two to three minutes after intramuscular injection. The well known symptoms of this poisoning are practically the same for all species and require no description here.

In this work we used 100 pigeons, nine rabbits, seventeen white rats and sixteen guinea-pigs for antidotal tests; and bloods from two dogs and three hospital patients besides the bloods of the birds and rodents for examination of chemical changes. At least three animals and three bloods were used for a test with each antidote, and more in the case of the positive antidotes. Pigeons were used for the most part because of economy and convenience, and they served the purpose of our work as readily as would larger mammals, such as dogs and cats, previously used by others. Rodents were used sufficiently to demonstrate their comparatively inefficient reaction to certain cyanide antidotes.

The oxygen capacity of the blood was determined with a simple device described by Anrep and Harris.[15] Generally 1 cc. of blood was used and the error did not exceed 1.5 per cent;

2. Sahlin, B.: Skandinav. Arch. f. Physiol. **47**: 284, 1926.
3. Eddy, N. B.: J. Pharmacol. & Exper. Therap. 1930, **39**: 271, 1930; **41**: 449 (April) 1931.
4. Geiger, J. C.: Cyanide Poisoning in San Francisco, J. A. M. A. **99**: 1944 (Dec. 3) 1932.
5. Hanzlik, P. J.: Methylene Blue as Antidote for Cyanide Poisoning, correspondence, J. A. M. A. **100**: 357 (Feb. 4) 1933.
6. Geiger, J. C.: South. M. J., to be published (personal communication to the authors).
7. Szigeti, Heinrich: Vierteljahrsschr. f. gericht, Med. **3**: 9 (supp.) 7593.
8. Hug, Enrique: Rev. Soc. argent. de biol. **8**: 270-276 (May-June) 417 (Aug.-Sept.) 1931; Rev. méd. del Rosario **22**: 912 (Nov.) 1932; Compt. rend. Soc. de biol. **111**: 87 (Oct. 3), 519 (Nov. 14) 1932.
9. Hug, Enrique: Rev. Soc. argent. de biol. **8**: 523 (Oct.-Nov.) 1932; Compt. rend Soc. de biol. **112**: 511 (Feb. 10) 1933; Prensa méd. argent. **20**: 371 (Feb. 15) 1933.
10. Wendel, W. B.: Methylene Blue and Cyanide Poisoning, correspondence, J. A. M. A. **100**: 1034 (April 1) 1933.
11. Forst, A. W.: Arch. f. exper. Path. u. Pharmakol. **167**: 108 (Proc.) 1932.
12. Turner, B. B., and Hulpieu, H. R.: J. Pharmacol & Exper. Therap. **48**: 445 (Aug.) 1933. Rentz, E.: Compt. rend. Soc. de biol. **102**: 59 (Oct. 18) 1929. Wiegand, C.: Arch. f. exper. Path. u. Pharmakol. **163**: 150, 1931.
13. Hug, Enrique: Prensa méd. argent. **20**: 1527 (July 12) 1933; Rev. Soc. argent. de biol. 1933, **9**: 91 (May), 197 (July) 1933. Hug, Enrique, and Marenzi, A. D., ibid. 1933, **9**: 83 (May) 1933. Buzzo, A., and Carratalá, R. E.: Semana méd. **1**: 1224 (April 13), 1966 (June 15) 1933.
14. Chen, K. K.; Rose, C. L., and Clowes, G. H. A.: Proc. Soc. Exper. Biol. & Med. **31**: 250 (Nov.) 1933.
15. Anrep, G. V., and Harris, D. T.: Practical Physiology, Philadelphia, P. Blakiston's Son & Co., 1933.

with 2 cc. of blood it did not exceed 1 per cent. This simple device deserves to be more generally known both in experimental laboratories and in clinics, since its use would facilitate desirable studies of blood and tissues, in preference to the tedious Van Slyke pipet. Although it is a general practice to rely on changes in oxygen consumption or capacity of red blood corpuscles for evidence of methemoglobin formation, this does not conclusively prove the presence of this blood pigment. For the latter purpose the spectroscopic examination is final, and therefore we made examinations of the same bloods with an Englemann microspectroscope. Unfortunately, however, spectroscopic examination for methemoglobin cannot yield an accuracy greater than 25 per cent, as it cannot be made on whole blood. We used 2 per cent hemolyzed blood in all cases and made comparisons with fresh untreated blood and a blood containing methemoglobin, resulting from nitrite action, in microscopic fields side by side. Many hemolyzed bloods required filtering, especially the blood of pigeons, before satisfactory examinations could be made. All results on oxygen capacity were corrected for the effects of the solvent or vehicle used with the antidote; for instance, distilled water or physiologic solution of sodium chloride added to blood or injected into the blood stream reduced the oxygen capacity about 2.5 per cent. Pigeon blood was found to have a normal oxygen capacity of about 9.5 per cent, rabbit blood 12.5 per cent, rat blood 12.3 per cent, guinea-pig blood 10.9 per cent, dog blood 17 per cent, and human blood 18 per cent, values which, in general, agreed with those reported in the literature.

TABLE 1.—*Positive Cyanide Antidotes: Efficiency and Blood Changes in Pigeons*

Antidote	Dose per Kg. Body Weight	Per Cent Protected*	Per Cent Resuscitated*	Blood Changes: Per Cent Reduction in Oxygen Capacity	Blood Changes: Methemoglobin (Spectroscopic)	Number of Fatal Doses of Sodium Cyanide Antagonized
Dyes						
Methylene blue	20 mg.	100	75	10	—	1½
Toluidine blue	20 mg.	100	...	11.6	—	2
Methemoglobinizers						
Sodium nitrite	20 mg.	100	100	20	+	3
Sodium nitrite and Sodium thiosulphate	20 mg. 1 Gm.	100	100	20	+?	6
Crystalline methemoglobin	0.5 Gm.	100	100	4.5	—	1
Sugar						
Triose	1.5 Gm.	100	100	0	—	1 to 2
Oxidant						
Sodium thiosulphate	1 Gm.	100	75	0	—	1

* Median results.
† The minus sign means absent; plus sign, present; (?), questionable.

The essential results with the positive antidotes are presented in table 1, these being compared with each other in pigeons. The results with other agents are briefly mentioned in the discussion which follows. A correlation of methemoglobin formation and antidotal efficiency of methylene blue and sodium nitrite in cyanide poisoning of different species is presented in table 2. All details are omitted; only the changes are reported.

POSITIVE ANTIDOTES

It is clear from table 1 that sodium nitrite was the most efficient single antidote and that a combination of sodium nitrite and sodium thiosulphate was the most efficient of all antidotal measures tried: confirmation of Hug [13] and of Chen, Rose and Clowes.[14] In pigeons, nitrite antagonized three fatal doses of cyanide and the nitrite-thiosulphate combination six, i. e., an efficiency ratio of two, while in dogs Hug and Chen, Rose and Clowes found a ratio of three. Since thiosulphate protected against only one fatal dose of cyanide, there was a potentiation in the mixture, as claimed by Hug and Chen, Rose and Clowes. The antidotal efficiency of these salts was the same in protective and resuscitative treatments.

Methylene blue, as compared with equal doses of sodium nitrite, was only half as efficient, without potentiation in the presence of thiosulphate. A similar tendency was reported by Chen, Rose and Clowes.[14] Methylene blue was less successful in resuscitative treatment.

Toluidine blue was somewhat more efficient in protective treatment than methylene blue in equal doses. It was tried because it is more positive than methylene blue on the oxidation-reduction scale for reversible systems, and the result obtained sustained an expectation of greater efficiency, but more extensive data would be needed to prove this point.

Triose was somewhat more efficient than methylene blue, but the dosage was nearly eight times greater, although it was less efficient than sodium nitrite. It acted equally well in protective and resuscitative treatments but by itself produced rather marked physiologic disturbances—especially increased respiration and restlessness—whereas all the other antidotes appeared to be symptomless.

Crystalline dog methemoglobin antagonized only one fatal dose of cyanide but was equally effective in protective and resuscitative treatments. The dose of 0.5 Gm. per kilogram used approximated the content of methemoglobin in blood, as indicated by reduced oxygen capacity after nitrite and methylene blue. However, the injected methemoglobin solution was quite rapidly excreted in urine, which probably explained its lower antidotal efficiency as compared with the higher efficiency of methemoglobin of corpuscles after injection of nitrite.

When the reduction in oxygen capacity of the blood was used as evidence of methemoglobin, there was clearly a division between the antidotes. Methemoglobin formers were methylene blue, toluidine blue, sodium nitrite, nitrite-thiosulphate combination and crystalline methemoglobin. However, only the nitrite alone showed the presence of methemoglobin spectroscopically. The other agents did not because not enough methemoglobin was present for identification. The decrease in oxygen capacity was not proportional to antidotal efficiency of the different agents. For instance, the nitrite-thiosulphate combination and nitrite had the same effect on oxygen capacity, but the former was once again as efficient against cyanide; toluidine blue had a greater antidotal efficiency than methylene blue but was only slightly more depressant on oxygen capacity; triose and thiosulphate were of about the same order of antidotal efficiency as the dyes but did not cause blood changes. Therefore the mechanisms of the antidotal actions of triose and thiosulphate, at least, were different from those of the dyes and nitrite. The sugar reacted with the cyanide to form cyanhydrine, and the thiosulphate oxidized it to sulphocyanate, both products being nontoxic. Since the sugar and the thiosulphate were less efficient than the dyes and nitrite, there was no doubt of the very high combining efficiency of methemoglobin for cyanide. A correlation of decreased oxygen capacity

16. Chen, K. K.; Rose, C. L., and Clowes, G. H. A.: Proc. Soc. Exper. Biol. & Med. **31**: 252 (Nov.) 1933.

and antidotal efficiency for methylene blue and nitrite will be discussed farther on.

The time element was important in the antidotal efficiency of both methylene blue and sodium nitrite. The optimum time under the conditions of cyanide poisoning in our experiments was ten minutes for protection and blood changes. No decline in efficiency was noticeable at the end of fifteen minutes, but at the end of half an hour the reduced oxygen capacity of the blood was about one half that at the end of ten minutes, and the majority of animals died from the cyanide. One hour after injection of the methylene blue or nitrite the blood was practically back to normal and no animals could be saved. This rapid decline in efficiency with time was due partly to a rather rapid reconversion of the methemoglobin to oxyhemoglobin and partly to urinary excretion of methemoglobin. In pigeons, the rapid urinary excretion of injected methemoglobin was quite noticeable, the expelled urine at the end of from ten to fifteen minutes being a deep chocolate brown.

Added to bloods in vitro, the various agents caused effects identical with those after injection. Under these conditions it was clear that the dyes were extremely

TABLE 2.—*Correlation of Percentage of Reduction in Oxygen Capacity of Blood (Methemoglobin Formation) with Antidotal Efficiency of Methylene Blue and Sodium Nitrite in Cyanide Poisoning of Different Species*

	Methylene Blue		Sodium Nitrite	
	Per Cent Reduction in Oxygen Capacity	Number of Fatal Doses of Sodium Cyanide	Per Cent Reduction in Oxygen Capacity	Number of Fatal Doses of Sodium Cyanide
Dogs*	16.0	2	24.0	4
Pigeons	10.0	1½	20.0	3
Rats	6.8	1	10.7	2
Guinea-pigs	4.8	1	8.6	1
Rabbits	2.0	0	2.5	0

* Estimates for dogs were based on data from Hug (Rev. Soc. argent. de biol. 9:461, 1933) and Chen, Rose and Clowes (Proc. Soc. Exper. Biol. & Med. 31:250 [Nov.] 1933). One fatal dose of sodium cyanide: 3 mg. per kilogram intravenously or intramuscularly; doses of methylene blue and sodium nitrite: each 20 mg. per kilogram intravenously.

inefficient methemoglobinizers as compared with the nitrite. The dyes required several days for such catalytic action when concentrations approaching those of injections were used. This inefficiency in vitro, taken together with a low methemoglobinizing efficiency in vivo, but a high antidotal efficiency in practice, especially in clinical cases, suggests that cyanmethemoglobin is not the sole life-saving factor. After all, the seat of cyanide poisoning is in the tissues and not in the blood, and methylene blue is effective even after symptoms of tissue poisoning (convulsions, respiratory stimulation, and the like) are manifested, regardless of how the nitrite would act. This naturally raises questions of possible direct tissue and cell actions of the dye. Conceivable is a catalyzing action on respiration, or on respiratory ferments, or an action of the dye itself as respiratory catalyst. Either one of these mechanisms could preserve life and assist in overcoming the poison; meantime, natural detoxicating actions of the tissues on the cyanide would be taking place. The two actions combined would be greater than either one alone. Something of the sort might also be imagined as the basis of potentiation by sodium thiosulphate, which forms no methemoglobin whatever. Therefore, this leaves something yet to be discovered which might fully explain the actions of methylene blue and toluidine blue, and possibly even nitrite and nitrite-thiosulphate, although the predominant mechanism rests with methemoglobin.

NEGATIVE ANTIDOTES

Negative, inefficient or extremely variable agents tried in cyanide poisoning were: Dyes: ethylene blue (up to 40 mg. per kilogram) and dinitrophenol (6 to 7 mg. per kilogram, with pyrexia). Methemoglobinizers: pyrogallic acid (10 to 20 mg. per kilogram, inefficient), chlorate (0.5 Gm. per kilogram), acetanilid (4 Gm. per kilogram) and amyl nitrite (inhalation; inefficient). Anticonvulsants: barbital (0.2 Gm. per kilogram) and ether (inhalation). Oxidants: dinitrophenol and crystalline dog oxyhemoglobin (0.5 Gm. per kilogram).

Very interesting were the negative results with the two dyes ethylene blue and dinitrophenol. The results appear fundamentally significant. Ethylene blue is, of course, as close chemically to methylene blue as anything that might be conceived; yet the ethyl group in this dye cannot exert the blood and physiologic changes necessary for detoxication of cyanide. This dye did not affect the oxygen capacity of blood in vitro and in vivo and formed no methemoglobin. Therefore the methyl group of methylene blue is responsible for these changes. Dinitrophenol greatly increases the oxygen consumption of tissues and stimulates oxidative metabolism, but it does not affect the oxygen capacity of blood in vitro and in vivo or form methemoglobin, even after concentrations and doses that would prove ultimately fatal. Therefore the detoxication of cyanide, according to this evidence, would not be a concern of cellular metabolism, tissue oxidation or fundamental respiratory mechanism, but rather of methemoglobinemia. Conceivably, however, dinitrophenol may activate only some phase of cellular metabolism, or oxidation, which is ineffective for oxidizing cyanogen. Finally, there are reasons to believe that methylene blue also can activate fundamental respiratory and oxidative processes, as already referred to, and this dye is a good antidote for cyanide. The question becomes too involved with hypothetical mechanisms for profitable discussion, but it is believed that further study of these dyes is bound to throw additional light on the fundamental nature of metabolic processes.

Of the remaining negative agents, chlorate and acetanilid were too slow or imperfect as methemoglobin formers; no decrease in oxygen capacity of the blood after these agents was demonstrable. In less than toxic doses, pyrogallic acid was inefficient. Inhalation of amyl nitrite[17] proved unsatisfactory under our conditions. Barbital and ether, in definitely depressant quantities, proved futile and disproved a theory of possible anticonvulsant effects of central depression resulting from any cause, including the low blood pressure of nitrites. The inefficiency of crystalline oxyhemoglobin showed that the protective effects of methemoglobin were of a chemical nature and not physical or colloidal.

VAGARIES AND CORRELATIONS OF METHYLENE BLUE AND SODIUM NITRITE

Negative results also were obtained with methylene blue and sodium nitrite in rabbits. This was due to a comparative absence of methemoglobin, since there was only about 2 per cent reduction in oxygen capacity of the blood. The complement to this result was the complete protection of two rabbits that received intravenously single fatal doses of sodium cyanide five minutes after intravenous injection of crystalline methemoglobin, 0.5 Gm. per kilogram. Two other rabbits, which received the cyanide ten minutes after the methemoglobin, were not saved, owing presumably to the rapid escape of this pigment from the circulation. Consequently, claims of positive results with a methemoglobinizing agent, such as methylene blue, in cyanogen poisoning of rabbits, and treatments based on such results must be regarded with skepticism. The use of rodents, especially the rabbits, was probably partly responsible for the negative results of Trautman,[18] who tested the value of methylene blue in poisoning from inhalation of hydrocyanic acid vapor.

Clearly the rabbit is not suited for testing the antidotal efficiency of methylene blue or nitrites or for investigating

17. Chen, K. K.; Rose, C. L., and Clowes, G. H. A.: Amyl Nitrite and Cyanide Poisoning, J. A. M. A. 100:1920 (June 17) 1933.
18. Trautman, J. A.: Pub. Health Rep. 48:1443 (Dec. 1) 1933.

methemoglobin. That such life tests with these rodents are inconclusive and misleading was pointed out several years ago by Heubner[19] in his criticism of the studies of methemoglobin formation from aniline, ferricyanide, nitrobenzene and nitrite by Van Slyke and Vollmund,[20] who used horse and rabbit bloods, and of aniline poisoning by Young, Muehlberger and Meek,[21] and of acetanilid poisoning by Young and Wilson,[22] who examined rabbit blood. In fact, it was recognized forty years ago by Szigeti[1] that the blood of carnivora was better suited to methemoglobin production than that of herbivora, but this fact has been ignored by many investigators up to the present day. Therefore the inadvisability of such tests with horse and rabbit bloods, which are not uncommonly employed in biochemical and physiologic experimentation, cannot be too strongly emphasized in order to avoid confusion when it comes to transferring results to cases of human poisoning.

However, not all rodents are to be regarded in the same class with rabbits, for we could demonstrate protection against fatal doses of sodium cyanide in rats and guinea-pigs receiving methylene blue and sodium nitrite. Simultaneously, the bloods of these rats and guinea-pigs showed reduced oxygen capacity and, after nitrite, also occasionally spectroscopic suggestion of methemoglobin. In fact, the data on antidotal efficiency, as indicated by the number of fatal doses of cyanide antagonized, and on reduction in oxygen capacity of the blood in different species, emphasize a close correlation of antidotal efficiency of the dye and nitrite with methemoglobin formation. Such data are presented in table 2, the data on dogs being obtained from recent literature and those on other animals from our experiments. According to table 2, the greater the percentage of reduction in oxygen capacity of the blood (methemoglobin) the greater is the number of fatal doses of cyanide antagonized. Gram for gram, sodium nitrite tends to be nearly once again as efficient as methylene blue in reducing oxygen capacity and antagonizing cyanide. Roughly, about 5 per cent reduction in oxygen capacity appears to be enough to antagonize one fatal dose of cyanide (guinea-pigs); 10 per cent reduction can antagonize from one and one-half to two fatal doses (pigeons and rats); from 16 to 20 per cent, two to three fatal doses, and about 25 per cent, four fatal doses. Dogs respond most efficiently to both dye and nitrite as to reduction of oxygen capacity and efficiency against cyanide; pigeons somewhat less, rats and guinea-pigs still less, and rabbits least, or not at all. The decrease in species reactivity to both antidotes is graduated according to decreases in oxygen capacity of their bloods, being especially noteworthy with nitrite. Man probably reacts similarly to omnivora, although our data were too limited and the doses of methylene blue and nitrite were not comparable with those in table 2. For instance, 10 mg. per kilogram intravenously of methylene blue in an adult man reduced the oxygen capacity of the blood 11.9 per cent in ten minutes, and this recovered to 6.1 per cent in one hour; 5 mg. of sodium nitrite per kilogram intravenously in another man reduced the oxygen capacity 6 per cent in ten minutes, and there was a considerable fall of blood pressure, flushing of the skin and respiratory excitation.

Perhaps the differences between rodents and other species and between rodents themselves are related to dietary and metabolic differences. At least, omnivora (dogs, pigeons, rats) and carnivora (dogs, cats) respond very positively with these antidotes, while herbivora do so less effectively (guinea-pigs) or not at all (rabbits). Clearly, the greater the methemoglobinemia, whether as the result of an antidote or according to animal species, the greater is the resistance to cyanide poisoning. Therefore, when biologic tests for methemoglobin formation are necessary in cases of poisoning, or in researches, the choice animals are dogs (cats, according to Heubner) or birds; possibly also frogs for nitrite. Species peculiarity as to methemoglobin formation is apparently not related to normal oxygen capacity of the blood, for, in this regard, carnivora and birds are farther apart than are carnivora and rodents. It might be related to corpuscle permeability. The use of hemolyzed blood in such tests would be something different from whole blood, as would also tests in vitro from those in vivo.

19. Heubner, W.: J. Pharmacol. & Exper. Therap. **30**: 273 (Jan.) 1927.

20. Van Slyke, D. D., and Vollmund, E.: J. Biol. Chem. **66**: 415 (Dec.) 1925.

21. Young, A. J.; Muehlberger, C. W., and Meek, W. J.: J. Pharmacol. & Exper. Therap. **27**: 101 (March) 1926. Young, A. G.: ibid. **27**: 125 (March) 1926.

22. Young, A. G., and Wilson, J. A.: J. Pharmacol. & Exper. Therap. **27**: 133 (March) 1926.

CHOICE OF ANTIDOTE AND DIRECTIONS FOR TREATMENT IN CYANIDE POISONING

From the results and questions that have been discussed, the first choice and an alternative choice of systemic antidotes in treating cyanide poisoning can be indicated. Although sodium nitrite and the nitrite-thiosulphate combination are more efficient in animals than is methylene blue, other considerations indicate the desirability of choosing methylene blue, for human cases. The chief danger from nitrite is sustained circulatory collapse, which might be invoked before symptoms of poisoning have advanced to the danger point or be added to impending or existing shock. The marked methemoglobin formation that nitrite causes could hardly be anything but an added unfavorable influence in case of collapse. These undesirable effects would be expected from doses of from 10 to 20 mg. per kilogram, which would give total intravenous doses of from 0.7 to 1.4 Gm. for an adult of 70 Kg. (140 pounds) body weight. Mota[23] injected a total dose of 0.57 Gm. sodium nitrite intravenously in a human case of cyanide poisoning with recovery. It may be argued that the patient could be given the benefit of the doubt on the supposition that nitrite collapse could not be worse than cyanide poisoning. As for using thiosulphate together with the nitrite, this would not avoid nitrite shock. As a matter of fact, the intravenous injection of a large volume of thiosulphate solution, in addition to the nitrite, should not be lightly undertaken. Furthermore, it is probable that thiosulphate as a stock antidote would give more trouble than value, for thiosulphate decomposes in moist air and in solution. The salt would have to be kept dry and the solution made fresh. Thus the time consumed would tend to defeat a possible potentiating action on the nitrite, and under such conditions the nitrite might as well be tried alone. Moreover, the effective dosage of thiosulphate used in animals would be prohibitive in man; that is, quantities from 70 to 105 Gm., or more than 2 to 3 ounces, total. Less than this is hardly worth while trying.

On the other hand, methylene blue keeps well in aqueous solution or in 1.8 per cent (isotonic) sodium sulphate solution. It should not be dissolved in physiologic solution of sodium chloride, since precipitation occurs, owing to a common ion (chloride) action. Its antidotal efficiency in cyanide poisoning is after all fairly high, and its clinical usefulness has been demonstrated. The antidotal action is assisted by preservation of all important physiologic functions practically unimpaired. Its toxicity is less than that of nitrite and it forms less methemoglobin, all of which accrues to physiologic recovery from poisoning. Doses of from 10 to 20 mg. per kilogram would be the equivalent of from 0.7 to 1.4 Gm. for a 70 Kg. adult, and actually Dr. Geiger has injected 2 Gm. (200 cc. of 1 per cent) intravenously with life-saving effects in cyanide poisoning. Triose causes such vigorous excitation of respiration and restlessness that it cannot be advised at present. Thiosulphate alone is, of course, practically inefficient. Therefore this leaves methylene blue as the antidote of first choice, and sodium nitrite, with or without thiosulphate, as the alternative, or second, choice. In prac-

23. Mota: Rev. méd. del Rosario **23**: 2 (Aug.) 1933 (with discussion by Hug).

tice, the treatment as proposed for and actually used in the emergency hospitals of San Francisco is as follows:

Inject immediately 50 cc. of a 1 per cent solution of methylene blue (containing 1.8 per cent of sodium sulphate) intravenously; repeat, if necessary, until a total of 200 cc. is injected. Frequently, consciousness and reflexes are restored before the first 50 cc. is completely injected, but, if the patient lapses into unconsciousness, or manifests respiratory depression, resume the methylene blue treatment. As quickly as possible, proceed with gastric lavage, using 5 per cent sodium thiosulphate: this oxidizes any unabsorbed poison. Artificial respiration, or oxygen-carbon dioxide inhalation, is given, if necessary, or as needed for the cyanosis and caffeine or digitan hypodermically, or strophanthin intravenously, for circulatory and respiratory stimulation.

The alternative procedure from the beginning is a slow and careful intravenous injection of 1 per cent sodium nitrite solution, in five divided injections, until 50 cc. is injected in about one hour. If improvement is manifested but prognosis is still unfavorable, the injection may be cautiously continued; but it is to be stopped at once in case of sudden collapse. Epinephrine should be ready at hand to combat nitrite shock, if necessary. Fortify the nitrite treatment at once with the intravenous injection of 20 cc. of freshly prepared 5 per cent aqueous solution of sodium thiosulphate (filtered), and, if necessary, continue the injection up to a total of 500 cc. if possible. The remainder of the treatment is the same as the foregoing.

The solutions used in these treatments can be readily sterilized by boiling for fifteen minutes.

It should be kept in mind that clinical cyanide poisoning is not always as rapidly fatal as may be imagined from animal experiments or textbook statements. There is generally considerable cyanosis in man, and symptoms or unconsciousness may be present for two or three hours, which ordinarily will be ample time for administering the treatments suggested. In suicidal poisoning, the cyanide is usually swallowed, which requires giving the whole treatment. Accidental poisoning, in different degrees, is quite common in ports where fumigation of ships with hydrocyanic acid is a routine procedure, and in fruit growing regions where hydrocyanic acid is used on a large scale as an insecticide, as in California. Emergency kits, therefore, should be properly equipped with the newer antidotes.

CONCLUSIONS

1. Experimentally effective in protective and resuscitative treatments of fatal cyanide poisoning, and clinically useful, in order of decreasing efficiency, are a combination of sodium nitrite and sodium thiosulphate, sodium nitrite, methylene blue and sodium thiosulphate. Experimentally effective, but clinically inadvisable, is triose (glycerinic aldehyde).

2. In mammals, including probably man, the antidotal actions in cyanide poisoning of the following are mediated predominantly through methemoglobin formation: nitrite-thiosulphate combination, nitrite, methylene blue and toluidine blue. Triose apparently forms cyanhydrine and is assisted by central stimulant actions. Thiosulphate is a direct oxidant of cyanide with formation of sulphocyanate.

3. Some kind of direct action, in part at least, on mammalian tissues and cells, independently of methemoglobin, is postulated for methylene blue, and such action is predominant in antagonizing cyanide poisoning of simple physical and biologic systems.

4. The most interesting of a number of ineffective agents are ethylene blue, which is chemically close to methylene blue, and dinitrophenol, a powerful metabolic stimulant and oxidant. Their ineffectiveness clearly indicates the specificity of methylene blue, the high combining chemical efficiency of methemoglobin, and the subordinate importance of tissue oxidation, at least as activated by dinitrophenol.

5. Life tests for methemoglobin formation in certain species of animals are useless. There are procedures for and limitations of blood examinations, which are valuable in interpreting and transferring results to human cases of poisoning.

6. The choice of antidotes and directions for treatment in cases of cyanide poisoning are outlined in this paper.

SYMPTOMS OF VIOSTEROL OVERDOSAGE IN HUMAN SUBJECTS

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During the past five years there have been carried out in the department of physiology in the University of Illinois College of Medicine a number of fundamental investigations on the physiologic mechanisms involved in the action of vitamin D. The information derived from these and other investigations has suggested the therapeutic use of this substance in concentrated form in a number of clinical conditions. However, it is my purpose in this paper not to discuss the results of these investigations but to describe some of the results of overdosage. Consequently, the clinical results of overdosage will be discussed without particular regard to the conditions for which the administration was undertaken. A. F. Hess and Lewis,[1] Bamberger and Spranger,[2] Opitz,[3] and J. H. Hess, Poncher, Dale and Klein [4] have all described toxic conditions in children, and Laurens [5] has reviewed the literature on toxicity in experimental animals due to irradiated ergosterol in some form. But there have been no extensive detailed accounts of this condition in adult human subjects, except those of Crimm.[6]

Much has been written and more implied about the danger from excessive amounts of activated ergosterol or viosterol. That it is an extremely potent substance is apparent. However, this fact does not militate against its use as a therapeutic agent if proper precautions are observed.

The first clinical use of viosterol was naturally in the condition resulting from vitamin D deficiency; namely, rickets. The cardinal manifestation of this condition is a disturbance of the metabolism of calcium and phosphorus. The predominant response to the administration of viosterol in this condition, then, is

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1. Hess, A. F., and Lewis, J. M.: Clinical Experience with Irradiated Ergosterol, J. A. M. A. **91**: 783 (Sept. 15) 1928.
2. Bamberger and Spranger: Vigantol bei tuberkulösen Kindern, Deutsche med. Wchnschr. **54**: 116 (July 6) 1928.
3. Opitz, H.: Hypermineralisation infolge intensiver antirachitischer Behandlung, Monatschr. f. Kinderh. **46**: 228, 1930.
4. Hess, J. H.; Poncher, H. G.; Dale, M. L., and Klein, R. I.: Viosterol (Irradiated Ergosterol), J. A. M. A. **95**: 316 (Aug. 2) 1930.
5. Laurens, Henry: The Physiologic Effects of Radiant Energy, New York, Chemical Catalog Company, 1933.
6. Crimm, P. D.: Vitamin Therapy in Pulmonary Tuberculosis: II. The Treatment of Pulmonary Tuberculosis by Means of Hypercalcemia Induced by Massive Doses of Activated Ergosterol, Am. Rev. Tuberc. **28**: 112 (Aug.) 1932. Crimm, P. D.; Strayer, J. W.; Watson, H. L., and Heimann, G.: III. The Effect of Viosterol on the Absorption, Retention and Excretion of Calcium, Am. Rev. Tuberc. **28**: 202 (Aug.) 1933.

a correction of this dysfunction. For this reason, viosterol came to be characterized as the "calcium-raising" factor. Attention was focused on this action and for some years little attention was paid to possible effects on other physiologic mechanisms. Overdosage effects have been thus quite generally associated with hypercalcemia.

The various projects undertaken here have clearly shown that the danger of excessive dosage is not serious and that toxic effects are only incidentally associated with hypercalcemia. Or, perhaps, a more correct statement would be that in human subjects there are other more reliable signs of toxicity than hypercalcemia.

In an earlier publication[7] it was shown that intravenous injections of concentrated viosterol in normal dogs may sometimes lead to extreme toxicity and death in a few days without consistent change in blood calcium. Also, severe symptoms of toxicity have been produced in human subjects without any elevation of blood calcium or phosphorus concentrations.[8] On the other hand, in both normal dogs and human subjects, hypercalcemia of great magnitude has been produced and maintained for days without evidence of toxicity.

While it is probable that the two conditions—toxicity and hypercalcemia—occur together very frequently, there are enough exceptions to make it clear that they are not interdependent but merely concurrent. With the administration of parathyroid extract it is seldom possible to elevate the blood calcium of dogs above 16 mg. per hundred cubic centimeters without danger, while with viosterol we have been able to sustain a hypercalcemia of 29 mg. for two weeks without even loss of weight. In one young adult human subject, a hypercalcemia of 24 mg. was sustained for eight days without evidence of intoxication. This subject has been observed for two years since, with no indication of subsequent injury.

That excessive calcium deposition in soft tissues may occur even with relatively low dosages of viosterol has been shown in this laboratory[9] and elsewhere. This has led to considerable apprehension. That this is not justified may be shown by the following observation:

If normal animals to which large doses have been administered until definite symptoms of toxicity have appeared are killed at any time during the period when calcium elimination in the urine is high and the tissues are examined, it will be found that many organs contain calcium deposits; microscopic examination will show that in many tissues, particularly the kidneys, cellular injury has occurred.

If, however, dogs in a comparable state of toxicity are allowed to survive until urine calcium elimination is again normal and until weight losses are recovered, no such deposits of calcium will be found in the soft tissues, and cellular injuries will have been repaired.

Furthermore, the toxicity in man may be recognized very early, even by the subjects themselves, before any serious damage has occurred. The indication, in such cases, is for discontinuance of viosterol until these symptoms disappear. Except under unusual conditions, it is then possible to resume administration at a lower dosage and still secure therapeutic results. Apparently such subjects become tolerant in certain respects after a rest period.

Viosterol 10,000 X has been administered to more than 300 human subjects during the past three years for a variety of purposes. Of this number, 230 had hay fever and asthma, fourteen had postoperative parathyroid tetany, and the remainder, including several apparently normal subjects, comprised a group with a variety of conditions. With the highly potent preparation it was not difficult to induce early symptoms of overdosage. From these cases it has been possible to secure accurate information as to the onset of symptoms of overdosage, the symptom complex of which is fairly uniform in course and outcome.

This preparation is approximately 100 times as potent as the standard preparation available on the market. It contains 920,000 international units of vitamin D per cubic centimeter. The average of a large number of determinations was 30 ± 2 drops per cubic centimeter of this particular concentration. Since most of the quantitative administration has been by drops, it is convenient to note that 1 drop contains approximately 30,000 international units, whereas 1 drop of the 250 D (100 X) preparation would contain about 300 international units.

It is a question whether the doses we have given in many cases bear any relation to the normal physiologic action of vitamin D. There is not enough evidence at present to settle this question. Although very much smaller doses are sufficient to correct the physiologic disturbances in vitamin D deficiency, there is some evidence which suggests that the effects of even these high doses are physiologic.

The therapeutic effect sought will determine the dosage to be administered in a given condition. For various conditions we have administered daily as high as 3 cc. of viosterol 10,000 X to human subjects—in one case for a period of five days without the slightest evidence of injury. However, in a few cases as little as 4 drops daily for three days produced symptoms of gastrointestinal disturbance. Several of these patients have been found to be sensitive to corn protein. It will be recalled that viosterol is a solution of irradiated ergosterol in corn oil. From this it appears that the symptoms were not due to hypervitaminosis D per se but to the allergic response to the protein contained in corn oil.

In a woman, aged 40, 15 drops daily for ten days has on three successive occasions produced nausea on the eleventh day. Corn oil alone did not cause this result. Obviously this represents a toxic threshold for this particular subject that is not due to allergy.

The most common initial symptom of incipient toxicity is increased frequency of urination. Most patients do not appear to experience any particular urethral irritation, and there does not appear to be any pronounced polyuria. In dogs, however, polyuria is rather common. The reason for this frequency is not clear. At first it appeared to be always associated with increased urinary calcium elimination. However, it has since been found that it occurs independently.

Concurrently with this symptom in many cases, or following its appearance, there also occurs anorexia with persistent nausea. This has occurred in every case of overdosage. In the earlier investigations the significance of this symptom was not recognized, because certain subjects neglected to report the occurrence of nausea.

7. Reed, C. I., and Thacker, E. A.: The Intravenous Administration of Irradiated Ergosterol, Am. J. Physiol. **98**: 21 (Jan.) 1931.

8. Rappaport, B. Z., and Reed, C. I.: Viosterol of High Potency in Seasonal Hay Fever and Related Conditions, J. A. M. A. **101**: 105 (July 8) 1933.

9. Reed, C. I.; Dillman, L. M.; Thacker, E. A., and Klein, R. I.: The Calcification of Tissues by Excessive Doses of Irradiated Ergosterol, J. Nutrition **6**: 371 (July) 1933.

Following quickly on the stage of nausea there was usually a gastro-intestinal disturbance easily confused with a generalized gastro-intestinal infection, except that there was never any significant elevation of temperature. Vomiting and diarrhea were usually quite severe but always abated within three to four days after the dose was reduced or the treatment discontinued.

While most subjects tend to gain weight on a dose of from 4 to 6 drops daily, every one showing definite symptoms of toxicity lost weight, in two cases as much as 20 pounds (9 Kg.). In an investigation of the effects of viosterol on oxygen consumption in normal dogs [10] and rats,[11] it was noted that whenever weight loss occurred there was always an increase in oxygen consumption. While no determinations of metabolic rate were made in any of our human subjects, it seems probable that there was an increase in metabolic rate along with loss of body weight. Poncher and Gasul [12] have suggested the same thing in connection with a study of viosterol therapy in tuberculous children.

This increase in metabolic rate is associated with an increase in the urinary excretion of nitrogen.[10] It appears that the thyroid mechanism must be affected by the excessive viosterol therapy.

Other symptoms that have been noted more or less commonly are muscular weakness, lassitude, dull aching in the muscles, dizziness, disturbed muscular coordination and disturbed equilibrium.

Despite a rather widespread impression that viosterol exerts an aphrodisiac effect, careful questioning of fifty men, forty-three of whom were married, as to subjective libido, frequency of intercourse and general interest in sex life has failed to bring out any evidence of aphrodisia other than that associated with general improvement in health. The maximum doses in this group ranged from 10 to 60 drops over periods of from one month to three years.

A similar group of women ranging in age from 20 to 60, all married, were questioned, and of this group only one admitted any stimulation of libido. Since this woman was given corn oil alone for a period of two weeks during which she first reported this stimulation, it is apparent that the viosterol was not responsible.

The work of Dodds and his collaborators [13] indicates that the sterols constitute a large group of chemically related substances, some of which are estrogenic to experimental animals. This suggested an investigation of the possibility that viosterol might exert such an influence on human subjects. A carefully prepared questionnaire was circulated among ninety female subjects ranging in age from 13 to 58 years, all of whom were menstruating regularly. The data requested included information as to the age of onset, regularity, frequency and duration. The doses ranged from 8 to 75 drops. The period of administration ranged from two weeks to six months.

One young unmarried woman who received a dose ranging from 20 to 60 drops daily over a period of two and one-half months stated that the frequency of menstruation was exactly doubled during that period and promptly returned to normal on discontinuance of the treatment.

One other subject, a widow aged 35, stated that during a period of three months of viosterol administration, in doses ranging from 6 to 40 drops, the menses appeared six days early in each cycle and that for two cycles after discontinuance of administration there was a delay of five days each time. Subsequently there was no disturbance.

In another instance a married woman, aged 47, stated that about ten days after cessation of normal flow at the first cycle after the beginning of administration of viosterol (two weeks previously) there began a scanty flow which lasted about ten days and then ceased. The treatment was continued for another six months, during which time there were no further irregularities. At the time of this irregularity she was receiving 15 drops daily. Subsequently the dose was increased to 40 drops a day for seven days.

Two other women reported definite shortening of the intermenstrual period on doses of 20 and 25 drops, respectively.

In three other instances there were complaints of slight disturbances, which, however, never became serious enough to cause any great discomfort. The doses were from 15 to 20 drops. While it is possible and even probable that all these effects did depend on the viosterol administration, it is evident that the disturbances are not of serious consequence, since there are only eight such cases in the group of ninety, and only one of these experienced any pronounced increase in subjective discomfort.

There has been some apprehension that continued heavy dosage of viosterol will lead to arteriosclerosis. A recent publication by Appelrot [14] indicates that, in dogs, a hypertension occurs, associated with a thickening of the media of the blood vessels. There is a practical criticism that may be made of his work; namely, that the method of measurement of blood pressure employed is not reliable.

Viosterol 10,000 X has been administered to twenty-three subjects 50 years of age or over. One of these was a woman, aged 72, who ingested 20 drops, or 600,000 international units, daily over a period of four months. At the beginning the blood pressure was 152 systolic, 108 diastolic. At the end of that time the reading was 145 systolic, 88 diastolic. Subsequent observation during a period of one month without treatment did not show any significant change, the reading now being 145 systolic, 92 diastolic. While none of these changes are of a magnitude that would be of much significance, there appears to be slight improvement, if anything.

Another subject, a woman, began to take 0.5 cc. of viosterol 10,000 X daily over three years ago for relief from postoperative tetany. After two months this was reduced to 20 drops a week. She was then 63 years old. Her blood pressure was 158 systolic, 97 diastolic, average of four readings. In January 1934 the reading was 160 systolic, 100 diastolic, a change of no significance. In none of the other subjects has there been any evidence that the treatment has in any way affected the state of resilience of the blood vessels.

That calcification or medial fibrosis may produce hypertension is recognized. That viosterol in sufficiently high dosage may produce one or the other of these conditions is possible. The amount necessary to produce either condition in the human subject has never

10. Reed, C. I.; Thacker, E. A.; Dillman, L. M., and Welch, J. W.: The Effects of Irradiated Ergosterol on the Metabolism of Normal Dogs, J. Nutrition **6**: 353 (July) 1933.
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14. Appelrot, Samuel: Hypervitaminosis D and Blood Pressure in Dogs, Am. J. Physiol. **105**: 294 (Aug.) 1933.

been determined. If conclusions may be drawn from results in dogs, there has never yet been given to any human subject enough viosterol to produce either calcification or medial fibrosis within the periods of time reported.

In four men ranging in age from 50 to 60 years there developed within a week after administration of from 10 to 20 drops daily very severe and persistent constipation, which disappeared after from two to three weeks. During this period, however, it was necessary to resort to frequent enemas.

It would appear, then, that there need be little apprehension about the administration of amounts ranging up to 150,000 international units daily for indefinite periods. Larger amounts had better be limited to periods of a few months at most, depending on the therapeutic effects desired.

The treatment of the condition of overdosage has in our work been limited entirely to decreasing the dose or discontinuing the treatment. Crimm [8] has suggested the intravenous injection of sodium bicarbonate or Ringer solution. We have not investigated either procedure.

SUMMARY

A study has been made of the administration of highly concentrated viosterol to 300 human subjects ranging in age from 7 to 72 years. The doses ranged from 3,000 to 2,760,000 international units daily, or a maximum of 920 times the normal antirachitic dose of 3,000 international units. Of these, forty-three patients showed symptoms of toxicity in varying degrees.

1853 West Polk Street.

THE INCIDENCE AND TREATMENT OF TRICHOMONAS VAGINALIS IN PREGNANCY

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Little attention is given to the vaginal secretion of pregnancy. Though normally greater in amount than in the nonpregnant, it is often considerably increased, contains leukocytes and pathogenic micro-organisms, and results in definite symptoms of varying intensity. The latter condition is frequently dismissed as a normal physiologic change, whereas if the secretion is examined microscopically it will be found in a great majority of instances to be associated with Trichomonas vaginalis.

This flagellate is found in about 10 to 40 per cent of pregnant patients and may be found in from 50 to 70 per cent of all patients with leukorrhea. It probably occurs more frequently in the pregnant than in the nonpregnant. One of the reasons may be that the increased female sex hormone in the body enhances its growth. Stein [1] has shown that female sex hormone added to a culture medium causes a much more rapid growth of the parasites and suggests that the marked recurrence of the organism following the menses may be due to the female sex hormone in the menstrual blood and not to the blood itself.

In a series of 309 unselected pregnant patients personally examined at the Berwind Maternity Clinic, trichomonas was found in the vaginal secretion in 20.7 per cent. Seitz [2] found the parasite in 20 per cent of pregnant patients; Brumpt [3] in 10 per cent of gynecologic patients; Hoehne [4] in 28 per cent nongravid as against 34 per cent of 102 gravid patients; Vavilova [5] in 28 and 35 per cent, respectively, of pregnant and nonpregnant women; Liss,[6] in 405 pregnant women, observed the organism in 19.5 per cent and Traugott,[7] in 125 pregnant women, in 21.6 per cent, while Häussmann [8] in 200 unselected gravid patients reported 37 per cent infected as against three in 150 cases examined by Davis.[9] Bland [10] found an incidence of 23.6 per cent in 500 obstetric patients. Of these, 257 were Negroes and 243 were white. Of seventy-nine patients with Trichomonas vaginalis in our clinic, forty-five or 57 per cent were Negroes. There apparently is a greater incidence in Negro than in white women.

Several authors report an increased puerperal morbidity in cases presenting trichomonas infection. Bland and his associates report a puerperal morbidity rate of 50 per cent in patients with the parasite and 25.4 per cent in those without. The morbidity was higher in white than in the Negro patients. Schmid and Kamniker [11] show a morbidity of 10.3 per cent in cases with trichomonas as against 4.8 per cent without trichomonas, and Liss, 29 and 15.3 per cent, respectively. Gragert [12] has 29.1 per cent morbidity. After antenatal treatment his morbidity rate dropped to 7.7 per cent. When the cases were positive for trichomonas in spite of treatment, the rate was 11.3 per cent. Cornell,[13] Greenhill [14] and others state that the trichomonas did not influence the lying-in period in their cases. We found no increase in puerperal morbidity in our series.

There is still a controversy as to the pathogenicity of this parasite. Donné [15] (1836) in the first report associated it with venereal disease. The various views at present are that it is harmless, that the purulent discharge is a result of specific bacterial infection and the trichomonas is a secondary invader, that the primary pathogen is yeast and the trichomonas occurs symbiotically as a nonpathogenic parasite, and that it is a specific infection. Most observers here and abroad, however, agree that with the eradication of this flagellate the associated symptoms and leukorrhea disappear.

The life history of the trichomonas is not known. It can be obtained in cultures and it reproduces by longitudinal binary fission. No cyst forms have been described, except possibly by Bensen,[16] but there is apparently a focus from which reinfection occurs. The parasite has been found in the rectum, mouth and bladder as well as in the vagina. One case of pyelitis due to this organism has been reported, as well as a number of cases of urethritis and prostatitis. In a few of the latter, the wives had a trichomonas vaginitis. It has also been found in the vagina of the monkey, in the

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3. Brumpt, E.: Précis de parasitologie, Paris, 1913.
4. Hoehne, O.: Zentralbl Gynäk. 40: 4, 113, 1916.
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6. Liss, W.: Monatschr. f. Geburtsh. u. Gynäk. 64: 31 (Sept.) 1923.
7. Traugott, E.: München. med. Wchnschr. 65: 386, 1918.
8. Haussmann, D.: Die Parasiten der weiblichen Geschlechtsorgane des Menschen und einiger Tiere, Berlin, A. Hirschwald, 1870.
9. Davis, C. H.: Am. J. Obst. & Gynec. 18: 196, (Aug.) 1929.
10. Bland, P. B.; Goldstein, Leopold and Wenrich, D. H.: Vaginal Trichomoniasis in the Pregnant Woman, J. A. M. A. 98: 157 (Jan. 17) 1931.
11. Schmid, A. L., and Kamniker, H.: Arch. f. Gynäk. 127: 362, 1926.
12. Gragert, O.: Monatschr. f. Geburtsh. u. Gynäk. 64: 37 (Sept.) 1923.
13. Cornell, E. L.; Goodman, L. J., and Matthies, Mabel: Am. J. Obst. & Gynec. 22: 360 (Sept.) 1931.
14. Greenhill, J. P.: Am. J. Obst. & Gynec. 16: 870 (Dec.) 1928.
15. Donné, M. A.: Compt. rend. Acad. d. sc. 3: 385, 1836.
16. Bensen, W.: Arch. f. Protistenk. 18: 115, 1910.

mouth of the cat, and in the intestine of the monkey, opossum and prairie dog,[17] as well as in other animals.[18]

Trichomonas hominis, which is found in the stools, is very similar to Trichomonas vaginalis except in the length of the undulating membrane. Stein has shown that under varying conditions the size and shape of the parasite and the length of the membrane can change. The proximity of the rectum to the vagina and the habit of most women of cleansing the anus toward the vagina after each defecation would allow of easy access from the intestine if this should be the focus. The bladder has been mentioned as a focus for reinfection, but the trichomonas would undoubtedly have been observed in routine examination of the urine and would have aroused considerable study long before the present interest.

The symptoms are essentially the same as found in nonpregnant patients, notably profuse discharge, which may be foul, itching and burning about the vulva and introitus; dyspareunia, and sometimes urinary symptoms. In mild cases the symptoms can be elicited only on close questioning, as they may not be very annoying, depending on the sensitiveness and cleanliness of the patient. On the other hand, they may at times be severe enough to disturb sleep.

Examination reveals a characteristic picture of diffuse redness about the introitus, with foamy fluid pus which is often mistaken for gonorrhea. The vagina may be diffusely red or reddened in patches. Sometimes there is little to be seen in spite of moderate symptoms. The increased vascularity and succulence, which is the most striking change in the vagina of pregnancy, should not be mistaken for evidence of trichomonas, nor should a moderate secretion be overlooked as a normal condition. The normal secretion of pregnancy is represented by a thick, white, crumbly substance, which possesses a distinctly acid reaction and is composed of epithelial cells and débris, and a great many Döderlein bacilli.

The diagnosis is readily made by placing a little vaginal secretion in two or three drops of physiologic solution of sodium chloride on a slide covered with a cover slip and examined microscopically under the high dry lens; or the hanging drop method may be used. The parasites are easily seen by their motion and often agitate clumps of cells or débris in which they become entangled. They vary in size but are usually a little larger than a pus cell. Stained smears are not used for diagnosis, because of the difficulty in differentiating the parasite from pus cells unless specially prepared.

The secretion for examination should be taken from the fornices and not from the cervix, as trichomonas is apparently not found in the alkaline cervical secretion. Specimens may be obtained by a platinum loop or from the lower blade of a bivalve speculum. Even simpler, when the examination is finished, the gloved finger is dipped into two or three drops of saline solution on a slide. The adherent secretion is generally sufficient for examination. If the latter method is used, one should have no antiseptic solution, lubrication jelly or dusting powder on the gloved finger as the trichomonas is easily affected and if not killed may become amotile.

TREATMENT

The multiplicity of treatments indicates that a satisfactory method has not been obtained. All relieve the symptoms, but reinfection is very prone to occur. This may be due to the fact that as yet the life cycle or focus of the parasite is not known. The methods used can be divided into two types: (1) those in which douches or tampons are used with various antiseptics, usually preceded by scrubbing of the vagina with tincture of green soap, and (2) the drying or powder treatment.

The treatments used in nonpregnant cases, which are rather drastic, are employed in modified form in cases of pregnancy. Hoehne washes the vagina with 1 per cent corrosive mercuric chloride followed by a glycerin mixture containing sodium bicarbonate or sodium borate. De Lee[19] favors this method but advocates putting the patient to bed for two days during the treatment. Schmid and Kamniker have used this method with fairly good results. Greenhill, after scrubbing the vulva and vagina with tincture of green soap, uses methylene blue (methylthionine chloride) tamponades followed by 0.5 per cent lactic acid douches. Mohler[20] injects a solution of Döderlein bacillus culture and lactose into the vagina with a syringe. Hibbert[21] uses a specific streptococcus bouillon filtrate. Cornell and his associates have used mercurochrome, methylene blue, gentian violet, acriflavine hydrochloride, glycerin with and without sodium bicarbonate, tincture of iodine, hexylresorcinol, lead acetate, zinc oxide ointment, metaphen and the like, and they advocate the Kleegman[22] treatment, which consists of scrubbing the vagina with tincture of green soap, painting with pyroligneous acid and insertion of Lassar's paste[23] tampons. Holden uses kaolin as a drying powder. Bland precedes the kaolin with 1 per cent trinitrophenol and follows with douches of compound solution of iodine. Sure and Bercey[24] use quinine sulphate with insufflation. Northrup[25] advises powdered sulphur, and Gellhorn[26] has obtained good results with acetarsone (stovarsol).

My associates and I have tried a number of these methods, which relieved many but were not entirely satisfactory. Lately we have used with very good effect a pure crystalline phenol in an acid medium, notably boric acid powder instead of the usual sodium bicarbonate, as the sodium bicarbonate often produces an irritation. Essential oils are added for their cooling effect. In acute cases the patient is allowed to take daily douches (from 1 to 2 drachms to a quart of water) for one or two weeks, which relieves the symptoms and allays the irritation. The vagina is then swabbed with a cotton pledget and the dry powder, mixed with three times its volume of boric acid powder, is instilled into the vagina, the patient being instructed to take a douche with warm water the same evening or the next morning. As the phenol content of the douche powder averages from 6 to 8 per cent, it must be mixed with at least three times its volume of boric acid powder before it is used dry in the vagina. If used full strength in a sensitive patient, it may cause a severe burn, as did occur in one case.

In a number of patients who harbored the organisms during pregnancy and had no treatment, a spontaneous cure occurred during labor and the puerperium. Follow-up examinations found them to be free from infec-

17. Hegner, R., and Ratcliffe, H.: J. Parasitol. **14**: 27 (Sept.) 1927.
18. Tanabe, Misao: J. Parasitol. **12**: 101 (Dec.) 1925.

19. De Lee, J. B.: Illinois M. J. **38**: 186 (March) 1920.
20. Mohler, R. W., and Brown, C. P.: Am. J. Obst. & Gynec. **25**: 718 (May) 1933.
21. Hibbert, G. F.: Am. J. Obst. & Gynec. **25**: 465 (April) 1933.
22. Kleegman, Sophia J.: Surg., Gynec. & Obst. **51**: 552-555 (Oct.) 1930.
23. Lassar's paste consists of salicylic acid 2 Gm., zinc oxide 24 Gm., starch 24 Gm., and petrolatum 50 Gm.
24. Sure, J. H., and Bercey, J. E.: J. Obst. & Gynec. **25**: 136 (Jan.) 1933.
25. Northrup, L. C.: J. Oklahoma M. A. **25**: 482 (Nov.) 1932.
26. Gellhorn, George: The Treatment of Trichomonas Vaginitis with Acetarsone (Stovarsol), J. A. M. A. **100**: 1765 (June 3) 1933.

tion. Two of the latter patients became pregnant shortly thereafter and again showed the parasites.

CONCLUSIONS

1. Vaginal discharge during pregnancy is often dismissed as a normal physiologic change but is frequently associated with Trichomonas vaginalis.

2. In a series of 309 pregnant patients personally examined, Trichomonas vaginalis was found in 20.7 per cent.

3. The symptoms are essentially the same as in the nonpregnant, and the diagnosis is easily made by a hanging drop.

4. My cases showed no increased puerperal morbidity.

5. The multiplicity of treatments indicates that a satisfactory method is not available, but we offer the use of a crystalline phenol powder which has been used with good effect in our series.

6. Some cases are apparently cured spontaneously during labor and the puerperium.

7. The life cycle of the trichomonas requires further study, but in the meantime many patients may be given much relief from the annoying symptoms and leukorrheal discharge associated with this organism by more careful attention to the microscopic examination of the vaginal secretion.

55 East Eighty-Sixth Street.

THE LATENT PERIOD IN THE ROENTGEN DIAGNOSIS OF PULMONARY TUBERCULOSIS

PRELIMINARY REPORT

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The roentgenologic diagnosis of pulmonary tuberculosis stands today on a firm foundation. It is generally conceded that tuberculous lesions in the lungs can be recognized at their earliest stages in the roentgenogram, often long before physical signs are present and frequently in advance of recognizable symptoms. The increased utilization of this method for the routine examination of the chest has resulted in a vast increase in the number of cases of incipient tuberculosis that have been recognized.

This development of our ideas as to the place that the roentgenogram should have in the recognition of pulmonary tuberculosis depends largely on the pioneer work of Cole, Dunham, Pancoast, Baetjer, Brown and Sampson, and Amberson. Williams and Hill's [1] study established firmly the superiority of the roentgen over the physical examination in the detection of minimal tuberculosis. Webb [2] summarized well the situation in this regard, and since then there have been numerous contributions which reflect the opinion that the roentgenogram is by far the most sensitive recorder of early pulmonary tuberculosis.

The statement has been repeatedly made [3] that in the presence of symptoms due to pulmonary tuberculosis the roentgen examination should reveal evidences of the disease in practically all cases. It has been said also that pulmonary tuberculosis might be present in the lungs without roentgen signs if it was of such a nature that it produced no symptoms. This appears to be borne out by cases without symptoms or signs in which the roentgen examination, made as a routine procedure, proves negative while later events indicate that a pulmonary lesion was probably present at that time.

There is, however, little accurate or definite evidence bearing on the question of how long a period must elapse from the time of the infection itself until roentgen manifestations first appear. The opinion is widely held that tuberculous lesions remain concealed for long periods before developing sufficiently to produce symptoms or signs. While numerous observations have been made as to the rapidity of development of tuberculosis in the lungs of animals after the artificial introduction of tubercle bacilli, there is very little specific evidence on this point in human beings. Redeker [4] has reported some cases of primary tuberculous infection in which the presumption that the infection occurred at a certain time is very strong because of the history of exposure, and evidences of tuberculosis in the roentgenogram appeared approximately four months later. The observation of roentgenographic changes in the chests of young children within relatively short periods after a known exposure to tuberculosis has been made. Ligner [5] has reported a case in an infant in which the roentgen signs appeared within ten days after the tuberculin skin test became positive. There was a period of at least twenty-five days between the occurrence of the infection and the development of definite changes observable in the roentgenogram. Aside from these few observations, no statements can be found in the current literature or in standard textbooks as to the matter.

Wessler and Jaches [6] state that there must be an area of infiltration near the surface of the lung at least 4 mm. in diameter to be visible on a roentgenogram. They observe that a tuberculous focus can exist without roentgen evidence of its presence, and a latent period intervenes during which the focus gets larger and finally becomes evident. The time consumed by this latent period is not given. McPhedran [7] believes that a tubercle from 1.5 to 2 mm. in diameter can be seen in the roentgenogram but also does not state how long a period must elapse before this size is attained. Fishberg [8] gives the clear impression that long periods may elapse between the occurrence of a tuberculous infection of the lungs and the appearance of roentgen signs. He believes that an active tuberculosis may be present without roentgenographic signs. He also states that it takes about eight weeks for a tubercle to develop.

It is obviously most difficult to date actually the occurrence of a tuberculous infection in the human being. It is often possible to state with accuracy the time of onset of symptoms, but that may be long after the onset of the infection. Only one means of great accuracy is at hand; i. e., the tuberculin skin test. That

From the Department of Radiology, University of Minnesota and the University Hospital.

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3. Rigler, L. G.: The Value of X-Ray Examination in Pulmonary Tuberculosis, Minnesota Med. **13**: 25 (Jan.) 1930.

4. Redeker, Franz: Ztschr. f. Tuberk. **40**: 163, 1927-1928.

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6. Wessler, H., and Jaches, Leopold: Clinical Roentgenology of Diseases of the Chest, Troy, N. Y., Southworth Company, 1923.

7. McPhedran, F. M., and Weyl, C. N.: Am. J. M. Sc. **174**: 313 (March) 1927.

8. Fishberg, Maurice: Pulmonary Tuberculosis, Philadelphia, Lea & Febiger **1**, 1932.

this is a most accurate means of indicating the presence or absence of tuberculous infection has now been well established, as shown by the recent work of Hart [9] and Myers [10] and the opinion of Fishberg [8] and others. The interval between the occurrence of the infection and the establishment of a positive skin test must be very short, probably only a few weeks or less.[11] A negative tuberculin skin test, except under unusual circumstances, is extremely good evidence of the absence of a tuberculous infection. By most observers, in fact, it is considered to indicate that the patient has never been infected with tuberculosis. In some instances, however, this may not be true, as the allergy may disappear, leaving a negative tuberculin skin test in an individual who had had a primary infection in childhood. In the young adult this is rather unlikely, but this possibility makes it difficult to state definitely that any particular individual has never had a tuberculous infection. A positive skin test has, of course, much less significance, indicating only that an infection has occurred at some time, and it has no imperative relationship to the present symptoms of any patient. When, however, a negative tuberculin test is followed in a relatively short time by a positive one, and a definite exposure to tuberculosis has taken place in the meantime, it seems justifiable to date the occurrence of the infection to some time during the interval between the two tests. It is assumed, of course, that the tests are properly done and properly interpreted.

With the increased use of the tuberculin skin test as a routine procedure, especially among university students, nurses, interns, school children and others, cases of the type previously cited are being observed.[12] If, in such cases, roentgenograms of the lungs were made prior to the negative skin test, promptly after the positive skin test and at frequent intervals thereafter, some idea of the duration of time that must take place between the occurrence of a tuberculous infection of the lungs and the development of roentgen signs might be obtained.

It must be noted that this can apply, in the majority of cases, only to a first infection or childhood type of tuberculosis. It is generally agreed that the adult type of tuberculosis rarely, if ever, occurs in individuals who have not had a childhood infection. The vast majority of persons, therefore, who develop the adult form of tuberculosis must already have a positive skin test. In that event there is no sure means of dating the occurrence of the infection. On the other hand, first infections no doubt occur frequently in young adults, and these lend themselves particularly well to this type of study. In the typical first infection tuberculosis, as seen in young children, the development may be very rapid, and the lesions are detected in the roentgenogram with ease because of their extensive character. In the group of young adults with first infection whose cases are to be reported here, the lesions had more the roentgenographic characteristics of the adult type of tuberculosis, so that their detection was not much easier than that of any early adult type of lesion. While the development may have been more rapid than that of the usual adult type of tuberculosis, nevertheless a study of these cases will throw some light on the minimum time which must elapse before the roentgenogram will reveal a tuberculous infection of the lungs, even if the maximum time is not clearly demonstrated.

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11. Hart,[9] Myers, J. A.: Minnesota Med. 15: 26 (Jan.) 1932.
12. Myers, J. A.: Recent Facts on Transmission of Tuberculosis, J. A. M. A. 97: 316 (Aug. 1) 1931.

We have been fortunate in observing a number of cases of pulmonary tuberculosis developing in medical students and interns who have previously had repeated tuberculin skin tests, chiefly by the Mantoux method, 0.1 mg. of old tuberculin being used in most cases, and also have had repeated roentgenograms of the chest. Some of these are included in the report of Myers.[12] For a number of years, under the direction of the Student's Health Service, all the medical students of the University of Minnesota have had routine tuberculin skin tests and roentgenograms of the chest at yearly intervals. We have therefore been able in some of these cases to trace exactly the time of onset of the infection and the period of time that elapsed before roentgen signs in the lungs became apparent. The important detailed incidents in these cases are tabulated farther on. It must be noted, however, that we have not attempted to record all the cases studied, or even all the cases in which the skin test changed under observation. We have, rather, selected a group of cases with a fairly definite exposure to tuberculosis in which a positive skin test and definite roentgen signs developed.

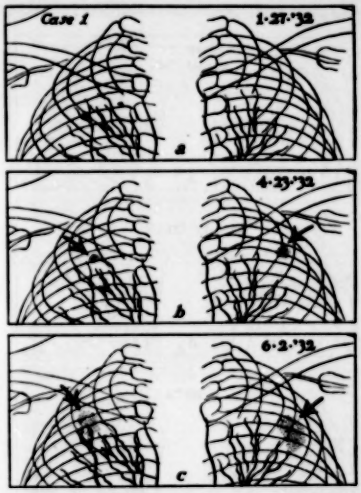

Fig. 1 (case 1).—Diagrammatic representation of roentgenograms of chest, showing only the upper portions: *a*, normal chest showing vascular markings; this was made almost six weeks after the first day of exposure to tuberculosis and about four weeks after the first positive tuberculin skin test. *b*, first positive film, taken about eighteen weeks after the first tuberculosis exposure; note the characteristic nodular infiltration in both subclavicular regions. *c*, film made about six weeks later; note the increase in the area of infiltration and the establishment of a drainage band, especially on the right.

CASE 1.—Nov. 21, 1928. Pirquet negative.

Jan. 16, 1930. Mantoux negative, 0.1 mg. Roentgenogram of chest negative.

Jan. 3, 1931. Mantoux negative, 0.1 mg. Roentgenogram of chest negative.

Dec. 19, 1931. Known exposure to tuberculosis, first day.

Dec. 23, 1931. Mantoux negative, 0.01 mg. Roentgenogram of chest negative.

Dec. 31, 1931 (12th day). Mantoux positive, 0.1 mg.

Jan. 27, 1932 (39th day). Roentgenogram negative (fig. 1 *a*).[13]

13. Owing to the difficulty of reproducing the fine changes shown in the roentgenograms, all the illustrations are diagrammatic, faithfully representing the original films.

Feb. 20, 1932. Mantoux positive, 0.1 mg. Physical examination negative.

March 17, 1932. In bed with cold.

April 23, 1932 (125th day). Roentgenogram positive (fig. 1 *b*). Physical examination negative. Temperature normal.

June 2, 1932. Roentgenographic observations increased (fig. 1 *c*). Slight afternoon fever.

April 6, 1933. Roentgenographic observations decreased. No symptoms or physical signs.

In this case there was a definite exposure followed very shortly by a positive skin test. The roentgenogram made more than five weeks later was entirely negative (fig. 1 *a*). Sixteen weeks after the positive skin test and less than eighteen weeks after the first known exposure to tuberculosis the roentgenogram (fig. 1 *b*) was clearly positive. Unfortunately, no films were taken in the interim. Judging from the extent of the lesions shown in figure 1 *b* it seems highly probable that roentgenographic evidence could have been detected

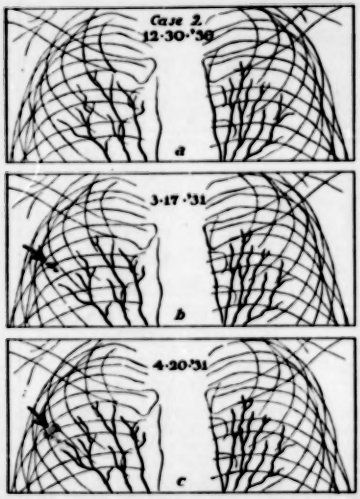

Fig. 2 (case 2).—Diagrammatic representation of roentgenograms of chest showing only the upper portions: *a*, normal chest showing vascular markings; this was made a few days after first tuberculosis exposure. *b*, first positive film, taken about eleven weeks after the first exposure; note the small irregular nodule in the right upper lobe some distance below the clavicle. *c*, film made about five weeks later; the nodule has increased so that the changes are much more definite.

a month or two earlier. There were no physical manifestations at any time. The roentgen manifestations have now persisted with some increases and some recessions for about twelve months.

The character of the roentgen observations is worthy of some note. There was a rather nodular type of infiltration in both infraclavicular regions (fig. 1 *c*). This was surrounded by a zone of haziness, although the nodules themselves were fairly well demarcated. Repeated roentgenograms at monthly intervals have shown both recessions and accretions in the size of the lesions until the last, which shows some decrease. The appearance is very similar to that described as an early adult type of tuberculosis by Wessler and Jaches,[*] Assmann [14] and others. The repeated negative tuberculin skin tests obtained before this exposure strongly suggest that this was a first infection. Nevertheless, the possibility that this was a second infection in an individual who had lost his allergy cannot be excluded.

14. Assmann, H.: Ergebn. d. ges. Tuberk. **1**: 115, 1930.

Case 2.—Jan. 1, 1929. Pirquet negative.

Feb. 27, 1930. Mantoux negative, 0.1 mg. Roentgenogram negative.

Dec. 26, 1930. Known exposure to tuberculosis, first day.

Dec. 30, 1930 (4th day). Roentgenogram negative (fig. 2 *a*).

Jan. 5, 1931 (10th day). Mantoux negative, 0.1 mg.

March 8, 1931. Known exposure to tuberculosis.

March 14, 1931 (78th day). Mantoux positive, 0.1 mg. Roentgenogram positive with minimal signs (fig. 2 *b*).

April 20, 1931. Mantoux positive, 0.01 mg. Roentgenogram positive with increased signs (fig. 2 *c*).

June 5, 1931. Pleurisy with effusion, same side as lesion.

April 17, 1933. Roentgen signs hardly discernible. Some thickening of pleura.

In this case the exact sequence is less clear because of the two exposures to tuberculosis. In view of the presence of roentgen signs six days after the beginning of the second exposure (fig. 2 *b*), it seems most reasonable to assume that the first exposure produced the lesion in spite of the negative skin test following this exposure. The latter was done only ten days after the beginning of this period, so it might still have been negative, even though an infection had occurred.

Assuming that the infection occurred with the first exposure, there was an interval of only eleven weeks from the first day of the contact until the roentgen signs were first observed. The later development of the pleurisy with effusion served merely to confirm the diagnosis.

A small rounded nodule was observed in this case in the periphery of the right upper lobe (fig. 2 *c*), which would correspond well with a primary tuberculous focus as often seen in childhood. It is notable that it did not increase in size but did persist for a long period. On the last examination, some two years after the original finding, the lesion could be identified only with difficulty.

Case 3.—Jan. 20, 1930. Roentgenogram negative.

Feb. 19, 1930. Mantoux negative, 0.1 mg.

Jan. 30, 1931. Roentgenogram negative.

Feb. 25, 1931 (1st day). Mantoux positive (+), 0.1 mg.

March 3, 1931 (6th day). Mantoux positive (+++), 0.1 mg.

May 5, 1931 (69th day). Roentgenogram positive (minimal signs). Pleurisy with effusion occurred shortly.

April 11, 1933. Roentgen signs hardly apparent.

In this case there was no known exposure to tuberculosis. The change in the skin test was definite, however, and was followed in a relatively short time by the symptoms of an acute pleurisy. It is more difficult to date the occurrence of the infection, because a whole year intervened between the last negative and the first positive skin test. In view of the fact that the roentgenogram of Jan. 30, 1931, was negative and that the first skin test of Feb. 25, 1931, was only slightly positive while in a short time it became strongly positive, it seems reasonable to assume that the infection occurred at about that time. We can say with certainty only that positive roentgen signs appeared within about ten weeks after the first positive skin test. Repeated roentgenograms since that time have demonstrated the persistence of the small nodule in the upper lobe, which was first observed. This nodule was very similar in appearance and location to that illustrated in case 2 (fig. 2). The pleurisy with effusion merely tended to confirm the diagnosis. The final roentgenogram almost

two years later showed almost a complete disappearance of all the changes.

CASE 4.—Dec. 12, 1929. Mantoux doubtful, probably negative, 0.1 mg.
Jan. 10, 1930. Roentgenogram negative.
Jan. 23, 1931. Roentgenogram negative (fig. 3 *a*).
Jan. 23, 1931. Mantoux negative, 0.1 mg.
Sept. 15, 1931. Known exposure to tuberculosis, first day.
Sept. 15, 1931. Mantoux negative, 0.1 mg. Roentgenogram negative.
Oct. 15, 1931 (30th day). Mantoux positive (++), 0.1 mg.
Jan. 19, 1932 (126th day). Roentgenogram positive (very slight) (fig. 3 *b*).
May 30, 1932. Roentgenogram positive (marked) (fig. 3 *c*).
Dec. 13, 1932. Roentgenogram shows some diminution of the condition.

In this case an exposure to tuberculosis for a month was followed immediately by a change in the skin test from negative to positive. The first roentgenogram (fig. 3 *b*) was taken eighteen weeks after the first known exposure and about thirteen weeks after the first positive skin test. The original interpretation of this examination was negative, but reexamination of these films after the observation of the rather marked changes four and a half months later showed clearly the presence of a small nodule in the apex where the subsequent changes were seen.

The roentgen observations in case 4 are unusually interesting. The character of the infiltration in the right apex (fig. 3 *c*) was typical of what is ordinarily considered to be an adult type of tuberculosis. The occurrence of the lesion in connection with the skin tests, as recorded, makes it appear that this was a primary infection and indicates how difficult it is to determine from the roentgenogram alone whether a lesion is of the primary or of the adult type. Again the possibility that this was a true adult type in an individual who had lost his sensitivity to tuberculin, as previously stated, must be strongly considered.

CASE 5.—Nov. 16, 1928. Pirquet negative.
Nov. 10, 1930. Known exposure to tuberculosis, first day.
Nov. 11, 1930. Roentgenogram negative.
Jan. 12, 1931 (63d day). Mantoux negative, 0.1 mg.
April 10, 1931 (151st day). Cervical nodes enlarged (biopsy later showed tuberculosis).
April 11, 1931 (152d day). Mantoux positive, 0.01 mg.
May 1, 1931 (171st day). Roentgenogram positive.
June 6, 1931. Roentgenogram shows more marked lesion (incipient bilateral apical).

In this case the enlarged lymph nodes presented the first physical evidences of tuberculosis. There was an interval of twelve weeks between the last negative and the first positive skin test. The roentgenographic observations appeared almost simultaneously with the positive skin test, and the negative roentgenogram five months earlier indicates the recent character of these observations. The increase in the lung changes also indicates the active character of the lesion. The exact date of the infection is difficult to determine but was most probably dated at the time of the known tuberculosis exposure, in spite of the negative skin test nine weeks later. If this date is assumed, the positive roentgen signs appeared within twenty-four weeks after the earliest possible occurrence of the infection. In this case also the roentgen manifestations were those of an adult lesion, there being a bilateral apical involvement of a rather fibrotic type, very similar to that in case 4.

From the records of these five cases it appears that an interval of from eleven to twenty-four weeks may elapse from the occurrence of a tuberculous infection to the development of roentgen signs that are susceptible of interpretation as indicating pulmonary tuberculosis. This obviously represents only the minimal time. It is possible that in some cases the minimal time may be even less. This might have been demonstrated if roentgenograms had been made at weekly intervals after the occurrence of the positive skin test. What the maximum time would be it is impossible to state. It is striking that the roentgenographic manifestations should appear so quickly, and it is notable that in none of these cases were there any physical changes determined. The symptoms in several of the cases were negligible or absent. In the others the symptoms were conditioned by the acute pleurisy or the presence of tuberculous lymph nodes.

The data here presented tend to confirm abundantly the assertion that the roentgenogram is a most sensitive

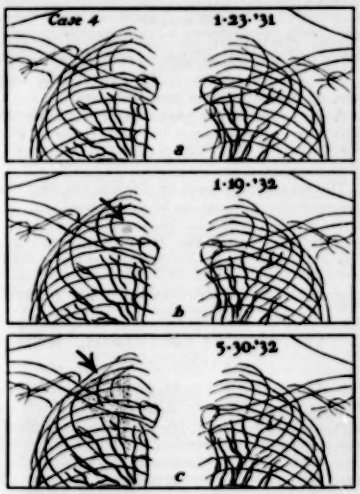

Fig. 3 (case 4).—Diagrammatic representation of roentgenograms of chest showing only the upper portions: *a*, normal chest shown in film taken about nine months before the first tuberculosis exposure; *b*, first positive film, taken eighteen weeks after the first tuberculosis exposure; note the very small nodule in the right apex. *c*, film made more than four months later; the changes have greatly increased, the whole appearance suggesting a fibrotic apical adult lesion.

method of detecting pulmonary tuberculosis in its earliest stages. It gives also some practical information bearing on the question of when it would be wise to make a roentgen examination of an individual after a tuberculous contact to determine whether an infection has occurred. It is evident that rarely will any information be obtained in this way until after the skin test becomes positive. Following this, a latent period of from three to six months, possibly less, must elapse before any roentgen changes will appear. How much longer the case must be followed, beyond the six months period, before a pulmonary lesion can be ruled out, it is impossible to say. Our experience thus far suggests that the lesions will be demonstrable by this time, but this is not clearly proved. As the length of time becomes prolonged, observations such as those

reported here become much less valuable, because of the possibility of a new exposure occurring and thus producing changes that might be assigned to the original exposure. For this reason any statement as to the maximum latent period would be most inaccurate if based on an observation of the ordinary human case.

It should be noted that these observations are based on a relatively small number of cases. It is obviously difficult to collect a large number of cases in which the coincidence of events detailed here occurs, and in which such close observations have been made. Nevertheless, the observations in these five cases have been so consistent and are in such accord with the previously known data that the conclusions derived are highly credible. It is hoped that this paper will direct the attention of those who are doing routine tuberculin skin tests and roentgen examinations of the chest to the possibility of making such observations, so that a larger body of cases may be collected.

SUMMARY

Careful observations in five cases of tuberculous infection in young adults seem to indicate the following:

1. The roentgenogram is an exceedingly sensitive method of detecting pulmonary tuberculosis.

2. A minimum latent period of from three to six months may elapse between the occurrence of a tuberculous infection and the appearance of roentgenographic changes.

3. The maximum period of delay in the development of roentgen changes cannot be determined.

MULTIPLE SCLEROSIS

CERVICODORSAL SYMPATHECTOMY AS A RELIEF MEASURE: REPORT OF A CASE

FREDERICK S. WETHERELL, M.D.

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The therapeusis of multiple sclerosis has been a baffling problem since the time of recognition of the disease as a clinical entity, and the multiplicity of agents employed in attempts at relief of the condition signify their lack of specificity. Perhaps the best results, and those rather evanescent in their effects, have been obtained when some form of fever therapy has been employed. This includes the vasodilatation obtained by diathermy, hot baths and the like.

A surgical procedure, namely, cervicodorsal sympathectomy, following which a most remarkable alleviation of symptoms has occurred in five cases, is the matter under discussion in this paper. Four cases have been reported by Royle,[1] and one case is herewith reported.

A full discussion of the symptomatology of multiple sclerosis, with its protean manifestations, a detailed analysis of the newer conceptions of the pathology or of the minutiae of the rationale of the treatment here suggested would be monographic. Only a short discussion of these phases will be presented, the main object at present being to call to the attention of the profession of this country a method already tried, which now appears to be the nearest approach to a solution of the problem of therapeusis yet presented.

SYMPTOMATOLOGY

It is now well known that the old triad of Charcot[2]—nystagmus, scanning speech and intention tremor—manifests itself late in the disease. Many of the earlier symptoms are often overlooked and, because of the sudden remissions so characteristic in its beginning, are put down as hysterical attacks or mild apoplexies, or "rheumatism." Among these early manifestations are ocular palsies; transitory diplopias; muscular weaknesses, which are associated with giddiness, nausea and headache; stumbling and tripping; stiffness of the legs and difficulty in climbing stairs; urinary frequency of sudden onset and cessation equally sudden;[3] slight difficulties in speech, and the like. Very often these disturbances follow or occur during a period of distress. Pregnancy, in a patient who has had previous attacks, causes an exacerbation almost without fail. In view of what follows, the analogy to hyperthyroidism and pregnancy is here emphasized, with its associated relation to the sympathetic nervous system.

PATHOLOGIC CHANGES

Charcot's description of the pathologic changes, consisting of a patchy loss of myelin, with relatively intact axis cylinders, perivascular infiltration, and dense gial infiltration, has not been markedly altered by later investigators. Plaques of sclerosis may be found in any part of the central nervous system.

Putnam[4] has recently made an important contribution in which he shows that vascular abnormalities with concurrent disturbances of circulation, notably decreased vascularization around the plaques, may be an etiologic factor. He cites Pfeifer,[5] who found that a zone of capillary deficiency surrounded many of the smaller vessels of the brain. This allows the inference that many areas of brain tissue are chiefly nourished by transudation through a single vessel. It would follow, then, that a constriction of this vessel would cause a relative anemia of the surrounding area, the absence of actual tissue necrosis being due to a supply from a neighboring vessel. The plaques of sclerosis have a constant perivascular distribution, and, as has been shown, the reaction to the relative anemia is such that the more resistant axis cylinders and glial fibers do not degenerate as does the myelin.

These observations are important when considered in the light of animal experimentation, which shows that the circulation to the brain may be noticeably increased by section of sympathetic vasomotor fibers. Further investigations may show that sudden elimination of an irritating factor that is affecting the sympathetic supply, with the resultant increase in circulation due to vasodilatation,[6] is a reasonable explanation for the remissions in the disease. Likewise, the fact that certain sympathetic nerve fibers may suddenly be free from irritation could account for the cessation of one manifestation of the disease while other symptoms remained stationary. This sequence of events might

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Credit is due Dr. Leslie G. Osborn of the Endicott-Johnson Medical Staff for calling to the author's attention Royle's work on multiple sclerosis.

1. Royle, N. D.: The Surgical Treatment of Disseminated Sclerosis, M. J. Australia **1**: 586 (May) 1933.

2. Charcot, Jean: Hospice de la Salpêtrière, Gaz. d. Hôp. **102**: 405 (Sept.) 1868.

3. Jelliffe, S. E., and White, W. A.: Diseases of the Nervous System, Philadelphia, Lea & Febiger, 1929.

4. Putnam, T. J.: The Pathogenesis of Multiple Sclerosis: A Possible Vascular Factor, New England J. Med. **209**: 786 (Oct. 19) 1933.

5. Pfeifer, R. A.: Grundlegende Untersuchungen für die Angioarchitektonik des menschlichen Gehirns, Berlin, Julius Springer, 1929, p. 220.

6. Forbes, H. S.: The Cerebral Circulation, Arch. Neurol. & Psychiat. **19**: 751 (May) 1928. Forbes, H. S., and Wolff, H. G.: Cerebral Circulation, ibid. **19**: 1057 (June) 1928.

be compared to the uneven distribution of the vasoconstrictor manifestations found in a vasospastic disease, such as Raynaud's, in which the fingers may be affected, or the toes, or both. The previous condition of the vessels in one digit may be a factor in the determination of whether that member rather than another is to be the seat of a terminal ulcer. The same argument might be advanced in relation to the circulation in various parts of the cerebrospinal system.

EXPERIMENTAL EVIDENCE

Decreased vascularization has been shown [7] to result in myelin degeneration of the type found in multiple sclerosis and can be explained on the basis of an asphyxia or anoxemia of the tissue in the neighborhood of the involved vessels.

In a summary of his investigations Putnam says:

> The histological characteristics of the disease may be closely imitated experimentally by a number of different procedures, all of which have in common an interference with the blood supply of the affected area. These facts give a new importance to the vascular abnormalities which have long been recognized as a characteristic of sclerotic plaques. . . . The ultimate etiological factor should probably be sought in a local vascular abnormality, or in some alteration in coagulability of the blood.

Royle [8] has shown by animal experimentation on brains of living goats that there is an improvement in cerebral circulation following sympathetic trunk section. His observations relative to relief of venous congestion are interesting when considered in the light of Pfeifer's studies, which show that the "perivascular free space" obtains part of its nourishment from the vein contained within it, and of Putnam's, that blocking of this venous supply produces acute lesions having a gross and microscopic resemblance to the lesion found in multiple sclerosis in man.

REPORT OF CASE

History.—R. E., a man, aged 57, referred to me by Dr. R. J. McMahon of Endicott, N. Y., was admitted to the Syracuse Memorial Hospital, Nov. 6, 1933, with a diagnosis of multiple sclerosis. The examination was checked by Dr. Noble Chambers, neurologist to the Memorial Hospital, who concurred in the diagnosis. The patient was unable to walk without the assistance of two strong men. He had a marked ataxia of both upper and lower extremities. Diplopia, nystagmus and scanning speech were present. Feeding himself was a practical impossibility because of intention tremor. It was impossible for him to write legibly. He was unable to arise from a chair and could not maintain his balance, even with the eyes open, when he was brought to a standing position. There was a marked euphoria present; also forced laughter at times, which, however, was not of the same degree as noted in pseudobulbar palsies. It was impossible to understand what he said; his wife, having become accustomed to the change in his speech, had to interpret for us.

All the foregoing had been present for eight years, with a gradual increase in severity. He had been practically bedridden for several years. He was troubled with constipation, requiring cathartics.

His past history and significant parts of his family history reveal that at 18 years and again at 39 he had attacks of disability which were diagnosed as "rheumatism." The latter attack disabled him for seven months. He states that he had pain in the joints and in his wrists at that time but that there was never any swelling. His brother, a physician, reports that there have been several cases of multiple sclerosis in relatives. He had never been operated on, and except for a recent illness during which there was jaundice due to cholelithiasis, as diagnosed at the Charles S. Wilson Memorial Hospital at Johnson City, N. Y., Sept. 10, 1933, he had been well, except at 18 and 39, as stated.

Examination.—The patient was very obese. In addition to the manifestations already enumerated, he had a blood pressure ranging between 175 systolic, 80 diastolic and 155 systolic, 90 diastolic, the former in September, the latter before operation, November 8. The pulse was 82. Dr. J. G. F. Hiss, cardiologist, reported that a soft systolic murmur was present over the apex and as far as the anterior axillary line. A pulmonary systolic murmur, found by another examiner a few months previously, was not heard. There was no electrocardiographic evidence of disease. (Drs. Chambers and Hiss both felt that the attacks called rheumatism may have been early manifestations of multiple sclerosis). Tendon reflexes were normal; the abdominal reflexes were absent. The Wassermann reaction was negative. A diagnosis of multiple sclerosis, largely cerebellar in type, was made and several internists felt that the diagnosis was correct.

An examination of the eyes by Dr. S. B. Marlow, attending ophthalmologist to Syracuse Memorial Hospital, showed that bitemporal pallor was lacking. There was a fine right lateral nystagmus present, and relative scotomas were present for red.

Operation.—November 15, a right cervicodorsal sympathectomy was performed. The superior thoracic and the inferior cervical ganglions with the sympathetic trunk and connecting rami were removed. The posterior approach, as described by Henry,[9] was used, with the exception that the first rib rather than the second was sectioned.

Following the operation a right-sided Horner's syndrome was noted. The blood pressure was: right arm, 182 systolic, 120 diastolic; left arm, 188 systolic, 124 diastolic. Five hours after operation both his wife and a patient in the next bed were astounded at the improvement in his speech. This was very noticeable and commented on by every one in attendance on him, nurses and interns. While the possibility that this may have been a postanesthetic result was considered, the continued improvement beyond a period when this could have been possible argues against such a conclusion.

On the following day his nurse reported that he would not wear his glasses, saying that he could see better without them. Three days later a marked improvement of his intention tremor was noted. He said that his legs felt different and that he felt as if he could walk if he should be allowed out of bed.

All these manifestations of sudden improvement coincide with those in the cases reported by Royle.

The speech improved daily, enunciation becoming clearer, and slurring was markedly lessened when he did not attempt to hurry his speech. He was delighted to be able to pronounce the words "cookie" and "calculate" distinctly—words that were among the first with which he had difficulty in the beginning of his illness.

December 6, the left side was operated on, the same procedure being followed as on the right. A bilateral Horner's syndrome was present following this operation. He was discharged from the hospital, December 22.

The improvements noted at that time were briefly as follows:

Possibly the disks had a better color, but this was uncertain.

He said that his eyesight was much better.

Constipation was no longer present.

He was able to hold a glass of water with one hand and could feed himself.

He could pick up a safety pin without evidence of intention tremor.

He wrote much better, unless he was tired following exercise.

He was able to get up from a rocking chair and stand with his eyes closed.

He could walk several hundred feet, leaning on his wife's arm.

These observations were checked by numerous persons interested in the case.

Jan. 7, 1934, Dr. McMahon and I, after examining the patient at his home and after conversing with his wife,

7. Ferraro, Armando: Experimental Toxic Encephalomyelopathy: Diffuse Sclerosis Following Subcutaneous Injection of Potassium Cyanide, Arch. Neurol. & Psychiat. 29: 1364 (June) 1933.

8. Royle, N. D.: Alteration of the Circulation of the Brain by Surgical Means in Diseases of the Central Nervous System, Brit. M. J. 1: 1063 (June 11) 1932.

9. Henry, A. K.: Exposures of Long Bones, New York, William Wood & Co., 1927.

recorded that in general there was an improvement of 40 per cent. In some respects even a greater improvement could be recorded. This was particularly true with regard to enunciation. He pronounced such words as "liquid electricity" and "truly rural" very distinctly. The patient noticed a daily increase in general strength. Asked to stand from a sitting position on a low davenport, he arose easily and without the assistance of his arms. He stood with his eyes closed and feet together, maintaining his balance perfectly. He was able to read and remembered the thread of the article or story. The finger to nose and finger to finger tests were approximately 90 per cent perfect. The same applied to the heel to knee test. He did not require cathartics. His wife had noticed that he fed himself better than he did, that there was a decided improvement in his temperament, and that he was definitely stronger in every way.

These observations regarding improvement coincide closely with those in the cases reported by Royle. For this reason justification may be granted for reporting them so soon after operation.

Dr. McMahon reexamined the patient with a view to recording percentage improvements and wrote as follows, January 12:

My impression of the result of this operation on Mr. E. is that he has, to date, been benefited somewhere between 30 and 50 per cent. His speech, I believe, is at least 75 per cent better; the ataxia of his upper extremities somewhere between 30 and 50 per cent. He is able to get out of a chair unassisted and to stand with his eyes closed—something that he never could do since I have known him. He certainly can pick up a glass of fluid and feed himself much better than when I sent him to you. He is able to walk across the room unassisted but still lacks confidence. His wife tells me that when they are alone he goes all over the house but when he thinks he is being watched he is like a child learning to walk. He gets excited and needs a little reassurance, simply taking a hold of some one's hand being enough to steady him.

SUMMARY

1. In a case of multiple sclerosis, marked improvement was noted following a bilateral cervicodorsal sympathectomy.

2. The experiments quoted tend to rationalize the procedure on the basis of improved circulation and decreased irritation in the central nervous system.

3. Four cases reported by Royle show improvement similar to that noted in the case here reported. His oldest case shows improvement over a period of eighteen months.

4. The possibility that a sudden remission took place in five cases following the procedure outlined is extremely remote.

514 Medical Arts Building.

The Student of Internal Medicine.—Poll the successful consulting physicians of this country today and you will find they have been evolved either from general practice or from laboratory and clinical work: many of the most prominent having risen from the ranks of general practitioners. I once heard an eminent consultant rise in wrath because some one had made a remark reflecting upon this class. He declared that no single part of his professional experience had been of such value. But I wish to speak here of the training of men who start with the object of becoming pure physicians. From the vantage ground of more than forty years of hard work, Sir Andrew Clark told me that he had striven ten years for bread, ten years for bread and butter, and twenty years for cakes and ale; and this is really a very good partition of the life of the student of internal medicine, of some at least, since all do not reach the last stage.—Sir William Osler: Internal Medicine as a Vocation, Address delivered before the New York Academy of Medicine, 1897.

Clinical Notes, Suggestions and New Instruments

LIGATURES AND SUTURES OF ALLOY STEEL WIRE*

W. Wayne Babcock, M.D., Philadelphia

From its resistance to chemical change, modern alloy steel has been called the new noble metal. Soft or annealed stainless steel wire has marked tensile strength, stretches over one third of its length before breaking, and has such resistance to corrosion that when buried in the tissues for prolonged periods of time it remains untarnished and does not give rise to tissue discoloration or local irritation. After three months under a plaster cast, skin sutures of the wire retain their brilliant luster and show no tendency to irritate the tissues. For surgical purposes it may be substituted for the weaker and more brittle silver and bronze wires and replace, with advantage, horsehair, silk, and "dermal" as a fine approximating suture, and silkworm gut as a strong supporting through and through suture. The finer wire may readily be tied in the ordinary square knot without breaking or losing appreciable tensile strength and may even be used to ligate blood vessels. Encouraged by the toleration of living tissue for the wire, I have occasionally buried interrupted sutures and ligatures of fine wire in both septic and clean wounds to avoid the tissue reactions to catgut and silk. While further experience is desirable, it would seem that these insoluble bits of metal should cause no more trouble than the larger silver clips used in intracranial surgery. For delicate approximating sutures and for ligatures I would advise the 36 or 35 B. & S. gage (0.0007 inch), which is the size of a fine hair and has a tensile strength of about 2½ pounds. For supporting sutures, the 30 B. & S. gage with a tensile strength of about 15 pounds is strong enough to support any ordinary abdominal wall. When applied as a ligature, a hemostatic forceps should be used in tying, to make sufficient traction to seat the knot firmly. The larger sizes, as used for the retention of broken bones, should also be tied by the traction of hemostats. The ends should be cut close to the knot, an old pair of scissors being used. In introducing a running suture, care should be taken not to kink the wire. The operating nurse should also be instructed to roll the wire carefully from one spool to another to avoid the kinking and twisting produced in careless winding. To its ease of handling, impermeability and other good qualities may be added that of cost. Nearly a mile of the fine stainless steel wire may be purchased for one dollar.

1720 Spruce Street.

CONGENITAL STENOSIS OF THE LARYNX

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Congenital stenosis of the larynx is a comparatively rare condition. Not more than twelve cases have been recorded in the literature within the past decade. Textbooks on laryngology give little more than mention to the subject. Within all probability numerous cases occur but are not diagnosed, owing to death at birth or shortly after by asphyxia.

True congenital stenosis is limited to atresia, bands or webs occurring within the glottis, involving the vocal cords, ventricular bands or arytenoids, and is permanent unless relieved by some surgical method. This condition should not be confused with the commonly seen congenital laryngeal stridor that results from an abnormal flaccidity of the epiglottis, which is usually elongated, or abnormal flaccidity or thickening of the aryteno-epiglottic folds. The majority of such cases need little treatment, and the condition is outgrown.

Jackson[1] states that the most frequent lesion of congenital stenosis of the larynx is a web or band situated at the anterior

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Read before the Section on Ophthalmology and Otolaryngology of the Medical Society of the District of Columbia, Oct. 20, 1933.

1. Jackson, Chevalier, and Coates, G. M.: The Nose, Throat and Ear and Their Diseases, Philadelphia, W. B. Saunders Company, 1929, p. 755.

commissure and they may extend to or beyond the middle of the glottis. The atresic type is very rare and usually incompatible with life. The case that I report in this paper is of the atresic type.

Many theories have been advanced as to the etiology of this condition. Congenital syphilis has been blamed, but little support is offered this theory. Clerf [2] recently reported three cases, two of which were in brothers, but he feels that there are too few cases to justify placing etiology on heredity.

According to Clerf, the embryologic fusion theory is most tenable and is generally accepted. Embryologically there is a period of fusion of the structures of the glottis, apparently a provision on the part of nature to prevent passage of the amniotic fluid down the respiratory tract. Later, about the eleventh week, there is a period of dissolution, at which time the arytenoid folds or swellings separate, followed by the superior and inferior folds parting to form the ventricular bands and the vocal cords proper, thus gradually forming the open glottis, which is seen at birth.

When stenosis occurs it is the result of incomplete separation of the fusion process and there remains a base of mesoderm covered with epithelium forming an atresia or in an attempt to separate, forming a band or web, which may be of variable thickness.

The symptoms depend on the impairment of laryngeal function. Small bands at the anterior commissure may cause little or no disturbance of respiration or phonation. Greater degrees of closure result in respiratory and vocal difficulties of a serious nature. In some cases laryngeal stridor may be the only symptom. This is usually heard both on inspiration and on expiration, whereas congenital laryngeal stridor is heard only on inspiration.

The diagnosis is made by direct laryngoscopy in the young and by direct or indirect methods in older subjects. Dean [3] states that this condition is not so rare and many cases would be recognized if the Washington University procedure were followed of examining every infant with an abnormal cry or stridor of any type.

The treatment depends entirely on the severity of the stenosis. In cases in which there is no dyspnea, little need be done. Jackson's [4] method is to incise the web along one cord only and allow it to flap down, thus preventing adhesions during the healing process. Bands are excised or removed with punch forceps. When the cords themselves are adherent, they are separated by median incision. Surgical diathermy has been recommended by Arbuckle [5] and others. Repeated bouginage is usually employed following any of these operative procedures, as adhesions are very prone to form. In infants and young children, tracheotomy is at times necessary to facilitate the operation and subsequent bouginage.

REPORT OF CASE

S. R., a girl, aged 7, seen, July 7, 1933, had frequent attacks of dyspnea, easily elicitated by excitement or a slight infection of the upper respiratory tract. She spoke with a whisper that could not be heard farther than the distance of 1 foot.

The past history, related by the mother, revealed that the labor was normal and that immediately after delivery she noticed that the child did not cry naturally but with difficulty; emitting a feeble, high pitched sound. During infancy there were frequent attacks of severe dyspnea to the point of cyanosis. These attacks diminished in frequency with growth but were easily produced by any excitement or mild coryza. There was no history of childhood diseases other than measles; the personal history and the family history were negative for syphilis and tuberculosis. The child was well nourished and of healthy appearance. General physical examination was negative except for a small umbilical hernia and enlarged tonsils. The Wassermann reaction negative.

Examination by direct laryngoscopy revealed an atresia of the free borders of the vocal cords anteriorly, reducing the glottis to half its normal size. The remainder of the larynx appeared normal, with good movements of the arytenoids and posterior halves of the cords. At this time attempts to dilate the stenosis were made with Jackson's brass bougies, without success, owing to the thickness of the atresia. Several days later, under general anesthesia, the cords were separated to the anterior commissure by a median incision with practically no hemorrhage. Reacting from the anesthetic, the child cried aloud for the first time in her life.

Under local anesthesia a week later direct examination showed the anterior borders of the cord adherent. This was easily broken down with dilators. At a subsequent examination it was necessary to incise adhesions at the anterior commissure, followed by bouginage.

The child has now a very slight atresia at the anterior commissure, the incised edges of the cords are a little roughened, the glottis is four-fifths patent, and movements of the arytenoids and true cords are normal. She has a normally audible speaking voice, which is slightly husky, and she has had no attacks of dyspnea since the first operative procedure.

COMMENT

Congenital stenosis of the larynx is a rare and interesting condition. Every infant with a persistent stridor or abnormal cry should have a laryngeal examination.

1408 L Street, N.W.

2. Clerf, L. H.: Tr. Am. Laryng. A., 1931, p. 210.
3. Dean, L. W.: Tr. Am. Laryng. A., 1931, p 213
4. Jackson, Chevalier: Personal communication.
5. Arbuckle, M. F.: Tr. Am. Laryng. A., 1932, p. 70.

A CASE OF GAS GANGRENE TREATED BY INFILTRATION OF THE TISSUES WITH PERMANGANATE SOLUTION

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B. B., a white man, aged 58, was brought to Butterworth Hospital, Dec. 16, 1933, at 1 p. m. from a railroad right of way, where he had been struck by a train. The right leg was frightfully mangled and, except for a band of skin, was severed at its midpoint. Measures to combat shock were immediately instituted and an amputation about four inches below the knee accomplished as soon as possible.

The postoperative course was not remarkable until the third day, when the patient became irrational, with a temperature of 104. At 3 p. m. of this day definite crepitation was elicited along the medial aspect of the amputation stump. The patient was isolated and all sutures were removed from the stump, leaving the wound wide open. A continuous drip of permanganate solution 1:1,000 was started into the wound. The crepitant area of the leg was infiltrated with a 1:500 solution of permanganate by means of a long needle and a Luer syringe. Then the midthigh was infiltrated with the same solution, producing an encircling block. The patient was given 10,000 units of perfringens antitoxin intravenously. He became rapidly worse and at 8 p. m. was delirious and violent, so much so, that an ether anesthetic had to be given to apply a restraining sheet. At 11 p. m. he seemed at least to be holding his own, so amputation higher up was postponed. At this time the leg was again infiltrated and the fascial compartments were incised.

On the following day the laboratory reported a stormy growth of B. welchii. The patient was rational and seemed somewhat better. Ten thousand units of perfringens antitoxin was again given intravenously. The infiltration of the tissues with permanganate solution 1:500 was also repeated. In the afternoon of this day an extensive débridement of the sloughing stump was done. On the following day the patient's condition was definitely improved. No advancement of the gangrene was apparent; in fact, little crepitus could be detected. The infection did not extend beyond the infiltrated area. The patient was rational and quiet.

From that time on the patient's course was uneventful except for the removal of a small amount of slough, Jan. 2, 1934. A severe secondary anemia was treated by repeated blood transfusions and the giving of iron by mouth. The patient improved steadily and on February 3 went home. At that time the stump was covered with healthy granulation tissue.

In a search of the literature we have been unable to find a report of any cases treated by infiltration of the tissues with permanganate solution. There are numerous references to the

use of permanganate solution as a wet dressing[1] or for irrigating wounds.[2] It is also spoken of as without beneficial effect.[3] This report is made in order that others may employ this infiltration procedure and determine its value.

1514 Grand Rapids National Bank Building.

Special Article

DIPHTHERIA MORTALITY IN LARGE CITIES OF THE UNITED STATES IN 1933

ELEVENTH ANNUAL REPORT

This report concerns the ninety-three cities dealt with in the recent article on typhoid,[1] and the rates are calculated on the basis of the population figures used in that article. The number of diphtheria deaths in each city has been reported to us by the respective health department.[2] Particulars as to the years that are included in the five year averages annotated as "incomplete data" are given in footnotes to tables 1-8

TABLE 1.—*Death Rates of Fourteen Cities in New England States from Diphtheria (Including Croup) per Hundred Thousand of Population*

	1933	1932	1931	1930	1925-1929	1920-1924	1915-1919	1910-1914	1905-1909	1900-1904	1895-1899	1890-1894
Hartford	0.0	1.2	2.4	1.2	5.2	11.9	13.8	25.3	28.1	38.8	47.8	120.9
Springfield	0.0	2.6	2.6	5.3	10.3	15.4	24.9	19.1	31.3	29.6	51.3	68.2
New Haven	0.6	0.6	0.6	0.6	1.6	7.1	14.2	14.9	22.7	15.6	54.8	74.5
Bridgeport	0.7	0.7	1.4	1.4	11.8	19.6	23.4	23.3	26.8	34.2	63.9	79.3
Lynn	1.0	2.9	3.9	10.7	13.5	17.0	17.8	17.2	21.7	28.0	44.0	69.0
Providence	1.2*	5.8	9.6	7.9	9.5	15.8	29.3	36.4	38.7	41.2	58.5	55.3
Cambridge	1.7*	2.6	0.9	0.9	5.2	8.9	12.9	23.8	25.3	46.7	71.9	58.0
Worcester	2.0	6.0	4.0	1.5	8.6	15.5	14.1	21.3	32.2	16.5	50.3	47.8
Somerville	2.8	2.8	5.7	26.9	5.7	19.7	20.2	21.4	21.5	40.5	57.8	57.4
Boston	3.3†	4.2	4.7	2.9	8.3	20.2	36.3	30.0	36.2	53.7	83.9‡	112.2
Fall River	4.4‡	2.6	7.1	3.5	12.0	25.5	21.6	24.0	34.4	50.1	43.8	46.9
New Bedford	5.4‡	2.7	8.0	8.0	10.9	16.5	17.0	20.9	22.6	25.1	53.6	20.0
Waterbury	5.9	2.0	0.0	3.0	2.6	17.9	23.0	29.6	....	....	....	....
Lowell	12.0‡	11.0	5.0	4.0	10.6	16.7	23.5	20.6	31.0	56.3	44.3	36.4

* All of the diphtheria deaths reported were stated to be in nonresidents.

† One third or more of the reported diphtheria deaths were stated to be in nonresidents.

‡ Rate computed from population as of April 1, 1930, as no estimate for July 1, 1932, was made by the Census Bureau.

in these reports up to and including the report for 1931 and in the discussion in the report covering the year 1932.

In the New England cities (table 1) diphtheria continues to decline. Hartford and Springfield completed the year without a single death and Providence and Cambridge state that the only diphtheria deaths were among nonresidents. The improvement in Bridgeport and Lynn in recent years is especially noteworthy. Boston has the lowest rate since 1930. Lowell alone among New England cities suffered from comparatively excessive diphtheria mortality in 1932 and 1933. Waterbury, however, after ten years of very low diphtheria, had a marked increase in 1933. The New England group as a whole (table 13) registers the lowest average it has yet reached.

The cities of the Middle Atlantic states (table 2) show a remarkable diminution in diphtheria mortality, the average for the whole group being lower than the average for any individual city in the years 1925-1929. It is perhaps too early to determine whether this is the effect of a natural fluctuation in the prevalence or fatality of diphtheria in this section of the country or whether it is caused by the application of protective inoculation, which, as is well known, has been practiced extensively throughout this region. That New York, long the focus of the campaign for diphtheria preven-

TABLE 2.—*Death Rates of Eighteen Cities in Middle Atlantic States from Diphtheria (Including Croup) per Hundred Thousand of Population*

	1933	1932	1931	1930	1925-1929	1920-1924	1915-1919	1910-1914	1905-1909	1900-1904	1895-1899	1890-1894
Elizabeth	0.0	3.4	4.2	14.8	13.2	19.2	19.3	14.8	51.7	42.4	68.5	79.3
Rochester	0.0	0.9	0.6	1.5	7.5	16.9	19.7	22.1	32.4	32.3	45.9	66.6
Syracuse	0.0	0.5	0.5	0.9	2.0	22.9	12.9	16.6	17.4	17.7	31.1	55.4
Yonkers	0.0	0.0	0.7	1.5	10.4	17.0	17.7	25.3	....	....	....	....
Newark	0.2	0.4	3.6	10.8	14.5	9.7	14.6	23.3	39.1	66.7	79.1	110.4
Philadelphia	0.7	0.8	1.5	2.5	11.8	16.7	22.7	24.6	34.1	50.9	102.6	119.4
Scranton	0.7‡	0.7	1.4	2.1	11.7	12.3	22.1	23.4	....	....	77.8‡	68.6‡
Trenton	0.8*	1.6	4.8	5.7	4.4	7.3	8.8	12.3	15.8	23.6	92.7‡	89.7‡
New York	1.2	2.9	2.6	2.9	10.7	14.0	21.8	29.0	40.0	58.0	85.8	134.4
Utica	1.9	0.0	1.9	2.9	13.4‡	....	....	....	....	....	....	....
Erie	2.5	6.7	2.5	3.4	5.8	16.6	15.1	17.7	27.1	42.3	23.1‡	....
Jersey City	2.5	3.7	4.1	16.1	11.5	16.4	21.0	23.2	32.6	57.9	65.4	108.6
Pittsburgh	2.9	4.7	4.1	8.5	11.5	20.1	22.3	29.3	39.4	36.9	22.9	86.4
Albany	3.1	0.0	6.6	3.1	7.5	12.8	10.4	20.0	31.6	38.9	....	....
Buffalo	4.8	3.4	6.2	8.7	9.1	24.0	27.3	22.0	18.4	24.8	62.5	68.9
Camden	5.9‡	8.4	9.2	11.8	21.9	29.3	23.2	34.6	40.9	52.6	92.5	104.0
Reading	6.2	2.7	0.9	3.6	7.3	21.1	16.9	35.7	39.2	70.1	72.0	94.1
Paterson	8.6	4.3	5.8	8.7	9.1	18.5	13.5	16.1	25.5	52.9	111.8	145.4

* All of the diphtheria deaths reported were stated to be in nonresidents.

† One third or more of the reported diphtheria deaths were stated to be in nonresidents.

‡ Diphtheria deaths from Chapin's Municipal Sanitation.

Incomplete data.

¶ Diphtheria deaths for Scranton furnished by Pennsylvania Department of Health, Harrisburg.

tion, should have reached the amazingly low diphtheria death rate of 1.2 per hundred thousand will be held by some to be significant. Two cities in this group (Elizabeth and Yonkers) achieve the proud distinction of having had no deaths in 1933 from either diphtheria or typhoid, a record shared only by Salt Lake City. With such examples before them, may it not be pos-

TABLE 3.—*Death Rates of Nine Cities in South Atlantic States from Diphtheria (Including Croup) per Hundred Thousand of Population*

	1933	1932	1931	1930	1925-1929	1920-1924	1915-1919	1910-1914	1905-1909	1900-1904	1895-1899	1890-1894
Baltimore	0.7	1.8	2.8	2.5	7.6	11.4	13.5	14.2	16.1	33.0	68.1	70.0
Washington	2.2	3.2	7.1	3.7	7.1	10.5	11.9	6.9	11.2	23.5	50.9	77.9
Norfolk	2.5‡	3.1	9.2	6.2	4.1	4.3	4.1	6.7	17.0	....	....	....
Miami	2.7	7.3	0.9	3.6	5.4‡	....	....	....	....	....	....	....
Richmond	4.3‡	1.1	5.4	3.2	6.9	9.8	5.8	7.0	9.8	24.4	17.6	50.7
Tampa	4.6	4.6	3.8	9.0	4.6	5.2	9.3‡	....	....	....	....	....
Jacksonville	5.0	7.1	2.3	5.4	6.6‡	....	....	....	....	....	....	....
Wilmington	5.6‡	1.9	6.6	10.3	10.9	11.6	15.2	18.0	27.6	50.9	84.9	83.6
Atlanta	12.0†	4.9	3.2	1.1	7.0	13.3	10.1	12.5	14.2	11.1	10.5	8.8

† One third or more of the reported diphtheria deaths were stated to be in nonresidents.

‡ Rate computed from population as of April 1, 1930, as no estimate for July 1, 1932, was made by the Census Bureau.

Incomplete data.

1. Brickner, W. M., and Milch, Henry: Internat. Clin. **6**: 226-238 (Dec.) 1926. Meyerding, H. W.: S. Clin. North America **13**: 889 (Aug.) 1933. Milch, Henry: Ann. Surg. **93**: 1220 (June) 1931.

2. Larson, E. E., and Pulford, D. S.: Gas Gangrene of the Extremities, J. A. M. A. **94**: 612-617 (March 1) 1930.

3. Report of Committee, Hospital for Joint Diseases, New York. Orens, Leonard: Am. J. Surg. **13**: 453-458 (Sept.) 1931.

The preceding articles were published in THE JOURNAL, Sept. 20, 1924, p. 918; April 25, 1925, p. 1269; April 3, 1926, p. 1005; April 30, 1927, p. 1396; May 19, 1928, p. 1621; May 25, 1929, p. 759; June 7, 1930, p. 1838; May 23, 1931, p. 1768; May 7, 1932, p. 1644; May 20, 1933, p. 1595.

1. Typhoid in the Large Cities of the United States in 1933, J. A. M. A. **102**:

2. It should be noted that the figures include all deaths of diphtheria that have occurred within the city limits, of nonresidents as well as residents. In some instances this undoubtedly gives an exaggerated impression of the amount of diphtheria in a community, but at present statisticians are agreed that "the attempt to eliminate the deaths of nonresidents would often result in an understatement of the true mortality" (Bureau of the Census, Mortality Statistics, 1912, p. 13). Cities in which one third or more of the reported diphtheria deaths are stated to have occurred in nonresidents are indicated in tables 1-8. In 1933 there were eighteen such cities, in four of which there were no resident diphtheria deaths. A further discussion of the problem of the nonresident in diphtheria statistics was given in the report covering the year 1931.

sible for Buffalo, Camden and Paterson to bring their diphtheria mortality to a lower point than that reported in recent years?

The cities in the South Atlantic states (table 3) have an average rate (3.49) more than double that of the cities of the Middle Atlantic division (1.47). Baltimore makes an excellent record, but the cities of sunny Florida (Miami, Tampa and Jacksonville) had in 1933 a considerably higher diphtheria mortality than most of the cities in the relatively inclement climate of New York and New England. Atlanta had one of the highest diphtheria rates in the country (12.0), equaled only by Lowell, Mass. (12.0), and Dallas, Texas (12.0), but a large proportion of the deaths in that city was said to be among nonresidents.

The East North Central cities (table 4) make a fine showing. Chicago's record is indeed spectacular (0.2). Detroit also makes a new low record. This group of cities had in 1925-1929 the highest average rate in any geographic division (11.21); it now has the next to the lowest (1.75). Here also sanitarians will watch with interest to see whether the change has a permanent basis or whether it is connected with one of the natural, if little understood, fluctuations sometimes manifested by this disease.

TABLE 4.—*Death Rates of Eighteen Cities in East North Central States from Diphtheria (Including Croup) per Hundred Thousand of Population*

	1933	1932	1931	1930	1925-1929	1920-1924	1915-1919	1910-1914	1905-1909	1900-1904	1895-1899	1890-1894
South Bend	0.0	0.0	0.9	5.8	....	....	....	....	....	....	....	....
Chicago	0.2	1.9	6.2	12.2	11.7	17.5	31.2	37.9	27.0	33.9	69.7	117.3
Youngstown	0.6	5.7	2.9	6.5	10.5	18.5	11.9	40.5	33.5	20.0	17.6	28.4‡
Milwaukee	0.8	2.5	1.8	3.6	8.5	11.4	19.8	27.6	26.4	22.7	51.7	118.2
Grand Rapids	1.1	0.0	0.0	0.6	2.0	19.6	13.5	20.0	20.6	17.2	32.4	99.2
Columbus	1.3	3.7	3.4	3.4	4.6	8.5	7.6	12.1	10.5	11.6	28.5	56.9
Canton	1.8	2.8	0.0	1.9	2.9	17.5	15.1‡	....	....	....	....	....
Akron	1.9	2.2	1.1	3.1	4.9	10.4	18.0	27.6	21.8‡	....	....	....
Cleveland	2.6	1.4	1.2	4.1	15.3	14.7	29.0	34.6	29.9	42.6	65.3	95.7
Cincinnati	3.0	2.8	2.0	2.9	5.2	10.6	13.2	13.9	17.0	17.2	37.3	103.7
Detroit	3.0	3.7	5.8	11.0	19.7	24.3	32.2	33.3	22.6	30.5	62.9	132.9
Toledo	3.0	1.7	5.0	2.4	7.2	22.4	14.1	25.4	20.4	56.8	34.6	69.3
Fort Wayne	3.3	1.1	4.2	0.9	5.1	13.1	6.2	....	....	....	....	....
Peoria	3.6†	12.6	1.8	5.7	4.9	7.6	10.8	10.6	10.3‡	14.0	14.6	68.0
Dayton	3.8	7.7	2.1	0.5	4.6	9.4	9.3	22.1	13.3	17.2	27.4	82.9
Indianapolis	4.0	1.9	2.4	3.6	6.6	11.7	21.4	13.5	13.3	15.9	36.4‡	97.3‡
Evansville	4.7	1.9	1.9	3.9	5.1	13.0	14.9	16.1	21.2	13.6	18.1	69.7
Flint	5.3	2.9	3.0	0.0	4.5	29.9	25.5	12.7	11.0	16.8	6.9	69.2

† One third or more of the reported diphtheria deaths were stated to be in nonresidents.
‡ Diphtheria deaths from Chapin's Municipal Sanitation.
# Incomplete data.

TABLE 5.—*Death Rates of Six Cities in East South Central States from Diphtheria (Including Croup) per Hundred Thousand of Population*

	1933	1932	1931	1930	1925-1929	1920-1924	1915-1919	1910-1914	1905-1909	1900-1904	1895-1899	1890-1894
Birmingham	2.9†	4.0	3.7	7.7	5.4	5.3	7.2	8.3	6.2	13.4	16.5	38.3
Memphis	4.5†	7.6	10.3	4.7	5.5	9.5	11.2	11.9	13.4	6.9	10.0	39.5
Nashville	7.0†	7.0	6.4	11.7	11.5	8.0	8.9	7.3	10.3	13.9	30.1	29.4
Chattanooga	8.0	4.8	9.8	1.7	5.9	8.7	8.9	....	....	....	....	....
Knoxville	8.0	15.3	11.0	2.8	6.3	11.2	....	....	....	....	....	....
Louisville	11.0	3.6	3.9	1.6	4.6	10.4	9.5	9.0	....	....	39.0‡	69.5‡

† One third or more of the reported diphtheria deaths were stated to be in nonresidents.
‡ Diphtheria deaths from Chapin's Municipal Sanitation.
# Incomplete data.

TABLE 6.—*Death Rates of Nine Cities in West North Central States from Diphtheria (Including Croup) per Hundred Thousand of Population*

	1933	1932	1931	1930	1925-1929	1920-1924	1915-1919	1910-1914	1905-1909	1900-1904	1895-1899	1890-1894
Duluth	0.0	1.0	0.0	1.0	2.0	6.0	10.2	8.8	38.2	29.1	7.6	49.5
Omaha	0.9	6.8	8.3	4.7	6.4	22.9	35.8	15.8	24.5	28.5	28.2	82.9
St. Paul	1.1	0.3	1.1	2.2	5.7	17.5	20.7	31.4	31.1	27.9	43.3	75.4
Minneapolis	1.4	1.0	2.7	2.4	11.9	13.4	19.9	29.3	24.4	44.6	34.0	55.0
Kansas City, Kan.	2.4	2.4	4.1	4.9	4.6	9.0	23.1	12.4‡	....	....	....	....
Wichita	2.5†	9.2	5.2	3.6	4.2	....	....	....	....	....	....	....
Kansas City, Mo.	2.6	3.4	3.9	4.0	4.7	14.4	22.8	15.7‡	....	....	....	....
St. Louis	3.7	3.5	4.6	5.1	10.3	16.1	24.4	23.7	19.4	43.3	62.9	67.7
Des Moines	5.5	8.2	0.7	2.1	5.2	15.1	16.8	15.1	23.8‡	....	....	....

† One third or more of the reported diphtheria deaths were stated to be in nonresidents.
# Incomplete data.

TABLE 7.—*Death Rates of Eight Cities in West South Central States from Diphtheria (Including Croup) per Hundred Thousand of Population*

	1933	1932	1931	1930	1925-1929	1920-1924	1915-1919	1910-1914	1905-1909	1900-1904	1895-1899	1890-1894
New Orleans	2.7	5.5	3.8	8.5	8.5	6.5	11.6	19.6	10.2	11.5	17.1	51.3
Oklahoma City	3.9	8.2	5.1	7.0	10.9	....	....	....	....	....	....	....
Tulsa	6.0	7.3	15.1	2.1	12.5	8.3‡	....	....	....	....	....	....
San Antonio	6.1	6.5	6.2	7.5	10.3	7.7	8.7	6.7	7.6	17.1	30.8	4.6
Houston	8.3	5.5	3.9	4.1	8.2	6.4	6.1	7.8	10.3	4.2‡	2.4	1.8
El Paso	9.3	5.6	5.7	8.8	7.3	20.0	17.6	29.2	....	....	....	....
Fort Worth	9.4	11.7	7.2	4.3	10.8	1.7‡	2.6‡	2.6	2.8	5.4	....	....
Dallas	12.0	16.3	6.6	6.9	9.8	8.3	7.4	6.9	8.1	16.9	16.0	21.8

Incomplete data.

TABLE 8.—*Death Rates of Eleven Cities in Mountain and Pacific States from Diphtheria (Including Croup) per Hundred Thousand of Population*

	1933	1932	1931	1930	1925-1929	1920-1924	1915-1919	1910-1914	1905-1909	1900-1904	1895-1899	1890-1894
Salt Lake City	0.0	0.7	0.0	0.7	10.1	12.5	14.5	15.1	34.2	68.0	14.8	58.7‡
Seattle	0.0	0.3	0.3	1.6	1.4	6.6	5.5	5.2	12.5	13.4‡	27.2‡	....
Spokane	0.0	0.8	0.8	1.7	7.5	11.3	4.2	7.6	25.8	59.5‡	18.1	
Long Beach	0.6†	1.2	0.6	1.4	2.6	10.4‡	....	....	....	....	....	....
Oakland	0.7†	2.3	0.3	3.9	7.4	18.8	8.1	10.3	16.1	29.1	....	....
Tacoma	0.9	0.9	0.3	8.4	9.3	12.4	7.7‡	....	....	....	....	....
Portland	1.0†	2.2	0.6	2.3	6.4	11.3	6.0	12.3	12.2	20.2	....	....
San Francisco	1.2	1.5	0.8	2.2	4.6	23.0	17.0	9.2	14.4	44.2	21.6	54.8
Denver	2.0	5.4	4.4	3.5	8.9	23.2	6.7	10.2	20.8	29.6	27.3	130.2
Los Angeles	3.7	6.3	5.2	5.6	7.0	14.4	7.1	7.5	15.3	25.4	35.8	66.0
San Diego	4.9†	3.1	2.5	2.0	6.6	12.2	10.5	8.0	5.8	2.4	....	....

* All of the diphtheria deaths reported were stated to be in nonresidents.
† One third or more of the reported diphtheria deaths were stated to be in nonresidents.
‡ Diphtheria deaths from Chapin's Municipal Sanitation.
# Incomplete data.

TABLE 9.—*Ten Cities with Highest Diphtheria Rates for 1933*

Atlanta	12.0	El Paso	9.3
Dallas	12.0	Paterson	8.6
Lowell	12.0	Houston	8.3
Louisville	11.0	Chattanooga	8.0
Fort Worth	9.4	Knoxville	8.0

TABLE 10.—*Eleven Cities with No Diphtheria Deaths in 1933*

Duluth	Salt Lake City	Springfield
Elizabeth	Seattle	Syracuse
Hartford	South Bend	Yonkers
Rochester	Spokane	

The cities of the East South Central division, with the exception of Birmingham and Memphis, do not show much improvement. Louisville seems to have had an excessively high diphtheria mortality, to judge from its own past record (table 5). Is it not about time for an intensive antidiphtheria campaign in some of these Southern cities?

The average for the West North Central cities (table 6) shows substantial improvement over that for the past three years. Duluth again leads the list and Omaha shows marked improvement over the three preceding years. Wichita and Des Moines, especially the former, seem to have recovered from their flurry of 1932.

The West South Central cities (table 7) bettered their average somewhat over 1932 but are still worse

off, on the whole, than they were in 1930 and 1931. New Orleans shows real improvement. But why should there continue to be so high a diphtheria rate in Fort Worth and Dallas? The latter city, together with Atlanta and Lowell, had for the year 1932-1933 the highest diphtheria mortality in the United States in proportion to its population. This cannot be pleasant reading for the Dallas chamber of commerce, and it is encouraging to learn that measures to remedy this condition are being undertaken.

The Mountain and Pacific cities (table 8) make a new low average. This group which ranked best in 1925-1929 is now quite outclassed for the second year in succession by the Middle Atlantic and East North Central cities. San Francisco continues to have a lower rate than the climatic resorts San Diego and Los Angeles.

Many sanitarians will consider that the evidence in the tables here presented warrants a continuance of the efforts to lessen diphtheria mortality by immunization of susceptible children.

TABLE 11.—*Number of Cities with Various Diphtheria Death Rates*

	No. of Cities	40 and Over	20 and Over	10 and Over	5 and Over	Under 5	0.0
1890-1894	64	52	60	61	62	2	0
1895-1899	66	34	53	63	65	1	0
1900-1904	68	22	46	64	66	2	0
1905-1909	72	3	43	66	71	1	0
1910-1914	79	1	36	63	78	1	0
1915-1919	84	0	25	62	81	3	0
1920-1924	88	0	14	65	86	2	0
1925-1929	92	0	1	22	67	25	0
1927	92	0	2	31	62	30	1
1928	92	0	1	21	50	34	2
1929	92	0	2	17	47	45	1
1930	93	0	2	11	32	61	3
1931	93	0	0	3	29	64	4
1932	93	0	0	5	27	60	5
1933	93	0	0	4	21	72	11

TABLE 12.—*Total Diphtheria Death Rates for Eighty-Eight Cities, 1923-1933* *

	Population	Diphtheria Deaths	Diphtheria Death Rate per 100,000 Population
1923	31,060,848	4,078†	13.13
1924	31,722,841	3,439	10.84
1925	32,384,834	3,133	9.67
1926	33,046,827	3,106	9.40
1927	33,708,820	3,460	10.26
1928	34,370,813	3,176	9.24
1929	35,032,806	2,738	7.82
1930	35,694,802	1,827	5.12
1931	36,360,412	1,366	3.74
1932	37,084,712	1,191	3.21
1933	37,084,712	861	2.32‡

* The five following cities are omitted from this summary because data for the full period are not available: Jacksonville, Miami, Oklahoma City, South Bend and Utica.

† Data for Fort Worth lacking.

‡ The rate for the ninety-three cities in 1933 is 2.33 (population 37,735,512; diphtheria deaths, 881). The corresponding rate was 5.12 in 1930, 3.72 in 1931, and 3.25 in 1932.

TABLE 13.—*Total Diphtheria Death Rates per Hundred Thousand of Population for Ninety-Three Cities According to Geographic Divisions*

	(1932) Population	Diphtheria Deaths		Diphtheria Death Rates				
		1933	1932	1933	1932	1931	1930	1925-1929
New England	2,631,305	70	95	2.66	3.65	4.35	4.57	8.34
Middle Atlantic	13,038,300	192	339	1.47	2.53	2.78	4.10	9.97
South Atlantic	2,375,507	83	76	3.49	3.39	4.42	5.65	7.37*
East North Central	9,759,600	171	259	1.75	2.65	4.23	7.79	11.21†
East South Central	1,242,500	85	76	6.84	6.11	6.87	5.00	6.34
West North Central	2,720,700	68	91	2.50	3.34	3.72	3.74	7.82
West South Central	1,961,700	132	160	6.73	8.16	5.93	6.43	9.24‡
Mountain and Pacific	4,025,700	80	158	1.99	3.43	2.71	3.59	6.28

* Lacks data for 1925 for Jacksonville and Miami.

† Lacks data for South Bend.

‡ Lacks data for Oklahoma City for 1925 and 1926.

Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY OF THE AMERICAN MEDICAL ASSOCIATION HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORTS.

H. A. CARTER, Secretary.

COLSON SAFETY INHALATOR ACCEPTABLE

The Colson Company, Elyria, Ohio, manufactures and offers for sale to the profession an electrically operated vaporizer Model NH-10. The unit may be described as a container having a heating coil on the inside and a connecting flexible tube, which conducts the vapor to the patient. It is recommended as an adjunct in the treatment of such diseases as pneumonia, laryngitis, croup, whooping cough, bronchitis and asthma.

The 400 watt immersion type heating element is located in the bottom of the kettle or water reservoir. A water-tight seal is provided between the element and the kettle. The two concentric copper sleeves or cylinders that form the central evaporating chamber are directly over the element. The space between these cylinders is sealed at the bottom to form a dead air insulating space between the water reservoir and the heating chamber. This keeps the water at a low temperature in the reservoir yet permits the water in the heating chamber to reach a maximum temperature of 212 F. and steam to be produced in less than four minutes after the current is turned on with the reservoir filled to the proper level with cold water. With warm water the time required is even less.

Colson Safety Inhalator

The medicine cup container is located at the top of the inner cylinder, the "hot spot" of the Inhalator, so that the medicine volatilizes quickly and the result is that the vapor administered contains a greater amount of medicine, insuring more satisfactory results. A curved tube conducts the steam from the inner chamber into the bottom of the flexible tube. The steam passing up the tube draws a current of cool air in through the intake opening and over the medicine cup. On the way up through the tube the volatilized medicine, cool air and steam are mixed, resulting in a medicated vapor of uniform quantity and temperature.

The Inhalator is prevented from overheating by means of an automatic thermostat, which is an integral part of the heating element. This prevents damage being done if the kettle should accidentally boil dry, although care should be taken to see that the Inhalator is not allowed to remain without water for any length of time while the current is on.

The cover of the Inhalator is of cast aluminum and is held in place by means of four tie rods. It can be easily removed by unscrewing the four acorn nuts. The medicine cup can be removed from its holder through the filler opening. The proper water level mark to which the reservoir should be filled is visible on the inner cylinder through the water filler opening.

The chromium plated tube is 36 inches long and 1½ inches in diameter. It can be detached from the Inhalator top by unscrewing the large nut at its base. The bakelite tip is permanently fastened to the tube. The Inhalator base and top have a baked on crinkle finish and all exposed metal parts are bright aluminum or chromium plated.

The capacity of the Inhalator is approximately 5 quarts, which is said to be sufficient to operate it continuously for twelve hours. The overall diameter is 10 inches and the overall height to the top of the cover is 12½ inches. The weight empty is 10½ pounds and the shipping weight packed in corrugated shipping container is 14 pounds.

One unit has been investigated in a clinic acceptable to the Council. The construction appeared satisfactory and the claims made in the advertising matter and descriptive literature conformed with the Official Rules of the Council. The Colson Safety Inhalator, therefore, is included in the Council's list of accepted devices.

T. J. LEAK-PROOF ATOMIZER ACCEPTABLE

The T. J. Manufacturing Company, Attleboro, Mass., submitted a product known as the T. J. Leak-Proof Atomizer. This unit comes in a small box measuring about 1¾ by 4¼ inches. It is so arranged that oil or other spray solution may be poured conveniently into the bottle. The nozzle is provided with a cap, which screws tightly and prevents leakage and also prevents leakage of the solution back into the atomizer bulb. The firm claims that the nozzle can be removed for sterilization and that the unit is economical and efficient. It is highly recommended by the company for use by those who travel extensively.

Leak-Proof Atomizer

Several of these units were examined by consultants of the Council. Their findings were in agreement with the claims made by the manufacturers. The company declared that no medicament of any kind is sold with the atomizer as part of the package.

The T. J. Leak-Proof Atomizer, therefore, is included in the Council's list of accepted devices.

SAMSON ULTRAVIOLET SUNLAMP, TYPE 140 A, NOT ACCEPTABLE

The Samson United Corporation, Rochester, N. Y., manufactures a product known as the Samson Ultraviolet Sunlamp, Type 140 A. It is advertised to the public and profession in pamphlets containing statements such as "health and light in the same lamp," "prevention and cure of rickets," and "building sound bones and teeth."

In a laboratory acceptable to the Council, measurements were made on a Samson Ultraviolet Sunlamp, Type 140 A, at distances of 30 inches (76 cm.) and 24 inches (61 cm.) from the front edge of the reflector. The lamp was operated with 115 volts A. C. (60 cycles) on the primary of the transformer, under which conditions (the secondary output) the input through the lamp was 10.3 volts and 6.2 amperes. The transformer accompanying this lamp was noisy and became rather warm on continuous operation.

Under these operating conditions the ultraviolet radiant flux of wavelengths less than and including 3,130 angstroms in microwatts per square centimeter (uW/cm²) was as follows:

Samson type 140 A = 15.5 uW/cm² (at 30 inches)
Samson type 140 A = 21.6 uW/cm² (at 24 inches)

The aforementioned values do not agree with the physical measurements submitted by the manufacturer, of which part of the report reads: "thus the erythemic efficiency (2804 to 3130A) of the Samson type 140 was 225 microwatts. . . ." The firm's measurements appear to be the result obtained by integrating the radiant flux "in all directions," whereas, in the Council's opinion, the profession and public are concerned only with the radiant flux at a specified distance below the lamp when it is in its reflector.

If this lamp is to comply with the specifications of minimum intensity (which, for this type of glow lamp, amounts to an erythemogenic equivalent of 108 uW/cm²) the Samson unit, type 140 A, it seems, would have to be operated at a distance of 10 to 11 inches to produce an erythema on the average skin in fifteen minutes. On the other hand, at a distance of 18 inches an exposure of about forty-five minutes would be required, and about one hour and twenty minutes at 24 inches.

The Samson United Corporation has not submitted evidence of animal experiments indicating that radiations from the lamp will cure or protect against rickets in rats or other rachitic animals under control. Furthermore, the firm has not submitted clinical or scientific evidence of any kind substantiating the therapeutic efficacy of the lamp.

Since the Samson Ultraviolet Sun Lamp, Type 140 A, does not meet the specifications of minimum intensity adopted by the Council on Physical Therapy and since the firm has failed to submit clinical or scientific evidence substantiating its therapeutic efficacy, the Council has omitted the Samson Ultraviolet Sunlamp, Type 140 A, from the list of acceptable devices for physical therapy.

Council on Pharmacy and Chemistry

REPORT OF THE COUNCIL

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORTS.

PAUL NICHOLAS LEECH, Secretary.

IODOCHLOROL AND IODOCHLOROL EMULSION NOT ACCEPTABLE FOR N. N. R.

Iodochlorol is the proprietary name under which G. D. Searle & Co., Inc., market a preparation stated by the firm to be "an iodine and chlorine addition product of peanut oil containing 25 to 27 per cent of iodine and 6.7 to 7.6 per cent of chlorine in organic combination." The firm also markets Iodochlorol Emulsion, which is Iodochlorol in an emulsifying menstruum containing ethyl esters (unhalogenated) of peanut oil as a diluent. The product was presented for the Council's consideration as an iodized oil for roentgen diagnosis and for iodine medication.

The manufacturer claims that "Iodochlorol (Searle) is the first successful attempt to prepare a fatty oil, which contains beside iodine, also chlorine in appreciable quantities chemically combined." Mainly on this claim the firm asserted justification for the use of a proprietary name. It was pointed out to the firm that the Council at that time was considering an iodized rapeseed oil which also contained chlorine and that the literature showed that the studies on which this product was based antedated those claimed by Searle & Co. for its product. The firm was informed, therefore, that the Council could not recognize a proprietary name for this product but would give further consideration to it if it was submitted under nonproprietary names such as "Chloriodized Peanut Oil," "Chloriodized Peanut Oil Ethylated" and "Chloriodized Peanut Oil Emulsion." After a considerable correspondence, the firm still insisted that it deserved priority in the making of chloriodized oil and in effect insisted on retention of the proprietary name.

The Council therefore declared Iodochlorol (Searle) and Iodochlorol Emulsion (Searle) unacceptable for inclusion in New and Nonofficial Remedies because they are not entitled to proprietary names.

BISMOID NOT ACCEPTABLE FOR N. N. R.

Bismoid is the proprietary name under which Eli Lilly and Company markets a product stated to be a stabilized suspension of finely divided bismuth, 25 mg. per cubic centimeter, in a sterile, aqueous medium, containing approximately 5 per cent of carbohydrate and glucose derivatives. The suspended matter is stated to contain at least 90 per cent of bismuth. It is proposed for use in the treatment of syphilis.

When the firm presented the product for consideration by the Council, it submitted practically satisfactory experimental data consisting of toxicity and clinical tests on animals. No data based on the clinical use of the product in man has been

presented. The firm presented also advertising which the Council found, in some respects, objectionable. After consideration of the material submitted by the firm, the Council decided that the product was not yet ready for acceptance for New and Nonofficial Remedies but directed that the firm be informed that the Council would sponsor a preliminary report if the advertising was revised to meet stated objections and if the name was changed to the generic designation "Bismuth Metal Suspension (Aqueous)" in accordance with a report of the Council's Committee on Nomenclature, which found that the firm could not properly claim priority for this preparation. The Council stipulated the further condition that the product be found acceptable by the A. M. A. Chemical Laboratory. The Council voted also to postpone further consideration of the product until satisfactory clinical data were submitted.

Although Eli Lilly and Company, early in the Council's consideration of the product, had agreed to accept the proposed change of name, the firm later informed the Council that on account of objections by its sales division, the change could not be accepted. In view of this the Council was obliged, without further consideration of the claims for the composition of the product, to declare "Bismoid" unacceptable for New and Nonofficial Remedies because it is a preparation of bismuth without sufficient originality to justify the proprietary and insufficiently informing name under which it is marketed.

Committee on Foods

ACCEPTED FOODS

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED BY THE COMMITTEE ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION FOLLOWING ANY NECESSARY CORRECTIONS OF THE LABELS AND ADVERTISING TO CONFORM TO THE RULES AND REGULATIONS. THESE PRODUCTS ARE APPROVED FOR ADVERTISING IN THE PUBLICATIONS OF THE AMERICAN MEDICAL ASSOCIATION, AND FOR GENERAL PROMULGATION TO THE PUBLIC. THEY WILL BE INCLUDED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED BY THE AMERICAN MEDICAL ASSOCIATION.

RAYMOND HERTWIG, Secretary.

MEAD'S SOBEE

Manufacturer.—Mead Johnson and Company, Evansville, Ind.

Description.—An infant food preparation containing soy bean flour, olive oil, arrowroot starch, Dextri-Maltose (essentially maltose and dextrins), dicalcium acid phosphate and sodium chloride.

Manufacture.—The soy bean flour ingredient is prepared from split and hulled soy beans, which are extracted with a fat solvent to remove most of the fat. The solvent is removed by evaporation in "vacuum." The resulting cake is ground to a flour.

Formula proportions of the solid ingredients are mixed with a suitable amount of water and cooked under low steam pressure; olive oil is added, the mixture is homogenized, dried in an atmospheric drum dryer and packed in cans.

Analysis (submitted by manufacturer).—	per cent
Moisture	2.4
Ash	8.0
Sodium chloride	1.0
Fat (modification of the Roese-Gottlieb method)	19.2
Protein (N × 6.25)	32.0
Crude fiber	1.4
Carbohydrates other than crude fiber (by difference)	37.0
Calcium (Ca)	1.45
Chlorine (Cl)	0.66
Copper (Cu)	0.008
Iron (Fe)	0.02
Magnesium (Mg)	0.16
Phosphorus (P)	1.40
Potassium (K)	1.42
Sodium (Na)	0.43
Sulphur (S)	0.30
Arsenic (As)	less than 0.5 parts per million
Lead (Pb)	less than 1.9 parts per million

Calories.—4.5 per gram; 128 per ounce.

Vitamins.—Vitamin B (complex), 8.5 Chick and Roscoe units per ounce.

Claims of Manufacturer.—A dietary preparation free from animal and milk protein for infants with milk idiosyncrasy.

SHENANDOAH APPLE SYRUP

SWEETENED WITH FRUIT SUGARS—INVERT SUGAR

Manufacturer.—Ridgewood Fruit Growers, Winchester, Va.

Description.—Syrup prepared from concentrated apple juice and cane sugar.

Manufacture.—The juice is expressed by hydraulic pressure from ripe Virginia apples free from arsenical spray residues, as certified by the state department of agriculture. The juice is filtered. A definite proportion of sucrose is added and the sweetened juice is concentrated to approximately 72 per cent sugar content and packed in glass jugs. The malic acid inverts the added sucrose to invert sugar during the concentration.

Analysis (submitted by manufacturer).—	per cent
Moisture	28.0
Ash	0.4
Fat	0.0
Protein (N × 6.25)	0.2
Reducing sugars as invert sugar	69.6
Carbohydrates (by difference)	71.4

Calories.—2.9 per gram; 82 per ounce.

BEECH-NUT PRESSURE COOKED FARINA CERE-JEL

(SLIGHTLY SEASONED WITH SALT)

Manufacturer.—Beech-Nut Packing Company, Canajoharie, N. Y.

Description.—Sieved cooked farina; seasoned with salt.

Manufacture.—Farina is cooked for thirty minutes in water containing 0.5 per cent sodium chloride. The remainder of the process is the same as that for Beech-Nut Strained Carrots (THE JOURNAL, Nov. 11, 1933, p. 1562) except that the jars are processed for two to three hours at 104 C.

Analysis (submitted by manufacturer).—	per cent
Moisture	88.5
Total solids	11.5
Sodium chloride	0.5
Ash	0.7
Fat (ether extract)	0.01
Protein (N × 6.25)	1.4
Crude fiber	0.1
Carbohydrates other than crude fiber (by difference)	9.3

Calories.—0.4 per gram; 11 per ounce.

Claims of Manufacturer.—Especially intended for infants, children and convalescents and for special smooth diets. Only warming is required for serving.

STOKELY'S FOR BABY SPECIALLY PREPARED STRAINED GREEN BEANS

(ADDED SALT)

Manufacturer.—Stokely Brothers & Company, Inc., Indianapolis.

Description.—Strained green beans, seasoned with salt, retaining in high degree the natural vitamin and mineral content.

Manufacture.—Fresh green beans are carefully inspected (imperfect ones eliminated), washed under high pressure water sprays, blanched a minimum time in boiling water, pressure cooked in an atmosphere of steam, and comminuted in an atmosphere of steam by being forced through a fine screen to produce the desired texture. The strained material is adjusted with hot water to the desired consistency, slightly seasoned with salt, heated and filled into enamel lined cans, which are sealed and heat processed.

Analysis (submitted by manufacturer).—	per cent
Moisture	92.0
Total solids	8.0
Ash	1.2
Sodium chloride	0.6
Fat (ether extract)	0.2
Protein (N × 6.25)	1.4
Reducing sugars as dextrose	0.4
Sucrose (copper reduction method)	2.0
Crude fiber	0.9
Carbohydrates other than crude fiber (by difference)	4.3
Alkalinity number (cc. normal acid per gram ash)	2.1
ph	5.2

Calories.—0.2 per gram; 6 per ounce.

Vitamins.—The natural vitamin content is retained in large measure in the manufacturing process by the use of equipment

and procedure which exclude incorporation of air; the vegetable material is exposed to steam only.

Claims of Manufacturer.—Supplementary to the infant milk diet, and valuable for children and adults on soft diets. Has smooth consistency and supplies desirable bulk without roughness. The straining renders the nutrient content readily available for digestion. Scientifically prepared to retain in high degree the natural flavor, mineral and vitamin values. Seasoned to bring out full flavor and packed in enamel lined cans. Requires only warming for serving.

(*a*) LIBBY'S FANCY RED ALASKA SALMON
LIBBY'S ALASKA SOCKEYE SALMON
LIBBY'S FANCY BLUEBACK SALMON
(*b*) LIBBY'S CHINOOK ALASKA SALMON
LIBBY'S FANCY CHINOOK SALMON

Packer.—Libby, McNeill & Libby, Chicago.

Description.—(*a*) Alaska Red or Sockeye Salmon and (*b*) Alaska King or Chinook Salmon.

Manufacture.—Salmon is rushed from the fishing nets to the cannery, inspected for elimination of bruised or deteriorated fish, conveyed to butchering machines, into tanks of flowing cold water, and to tables, where the cleaning and inspecting operations are completed. The fish are again washed, cleaned, automatically cut into proper lengths, and automatically canned with the addition of a definite amount of salt. The cans are sealed under a high "vacuum" and processed for ninety minutes at 116 C. The processing makes the fish ready to eat and softens the bone.

Analyses (submitted by manufacturer).—

Red.—

	per cent
Moisture	68.8
Total ash	2.9
Sodium chloride	1.1
Fat (ether extract)	7.6
Protein (by difference)	20.7
Calcium (Ca)	0.21
Phosphorus (P)	0.34

Chinook.—

Moisture	68.2
Total ash	2.6
Sodium chloride	1.2
Fat (ether extract)	9.7
Protein (by difference)	19.5
Calcium (Ca)	0.21
Phosphorus (P)	0.34

Iodine (I) (all species) ..... 120-630 parts per billion

Calories.—1.5 and 1.7 per gram; 43 and 48 per ounce.

Vitamins.—Fair, good and excellent source of vitamins A, G and D, respectively.

BEECH-NUT TOMATO JUICE
(SLIGHTLY SEASONED WITH SALT)

Manufacturer.—Beech-Nut Packing Company, Canajoharie, N. Y.

Description.—Tomato juice seasoned with salt (0.5 per cent), retaining in high degree the natural mineral and vitamin content.

Manufacture.—Juice is expressed from carefully selected washed ripe tomatoes by a machine permitting minimum exposure to air, 0.5 per cent sodium chloride is added, and dissolved air is removed by vacuumizing. It is heated to 82 C. and filled into jars, which are sealed under "vacuum" and heated to 82 C. for twenty minutes.

Analysis (submitted by manufacturer).—

	per cent
Moisture	94.1
Total solids	5.9
Ash	0.8
Sodium chloride	0.5
Fat (ether extract)	0.1
Protein (N × 6.25)	0.9
Crude fiber	0.3
Carbohydrates other than crude fiber (by difference)	3.8

Calories.—0.2 per gram; 6 per ounce.

Claims of Manufacturer.—The natural mineral and vitamin values are efficiently retained. Sealed under vacuum.

GOLDEN DRIP BRAND GOLDEN TABLE SYRUP

Distributor.—Union Sales Corporation, Columbus, Ind.

Manufacturer.—Union Starch & Refining Co., Granite City, Ill.

Description.—A table syrup; corn syrup flavored with refiners' syrup.

Manufacture.—Same as Pennant Golden Table Syrup, THE JOURNAL, Jan. 30, 1932, page 403, excepting that less refiners' syrup is used.

Analysis (submitted by manufacturer).—

	per cent
Moisture	25.5
Ash	0.7
Fat (ether extract)	0.0
Protein (N × 6.25)	0.1
Reducing sugars as dextrose	30.3
Sucrose (invertase method)	4.4
Dextrins (by difference)	39.0
Titratable acidity as HCl	0.04
Sulphur dioxide as SO_2	0.002
pH	5.4

No methods are available for accurately determining the composition of syrups of this nature; therefore the foregoing analysis is roughly approximate.

Calories.—3.0 per gram; 85 per ounce.

Claims of Manufacturer.—For table use and as a carbohydrate supplement for milk modification in infant feeding.

STOKELY'S FOR BABY SPECIALLY PREPARED STRAINED PRUNES
NO SEASONING ADDED

Manufacturer.—Stokely Brothers & Company, Inc., Indianapolis.

Description.—Sieved prunes largely retaining the vitamins and all the natural minerals.

Manufacture.—High grade medium sized prunes are carefully inspected to eliminate any unsuitable material, are washed under high pressure cold water sprays, are covered with a minimum amount of water, and the temperature is slowly raised to simmering and held there till the prunes are swelled and softened. The prunes and juice are drawn off and passed through a pulping machine to remove the pits; the mass is sieved through a fine screen, adjusted with hot water to the desired consistency, heated and filled into enamel lined cans, which are sealed and processed.

Analysis (submitted by manufacturer).—

	per cent
Moisture	65.7
Total solids	34.3
Ash	0.9
Fat (ether extract)	0.04
Protein (N × 6.25)	1.2
Reducing sugars as dextrose	20.6
Sucrose	1.0
Crude fiber	0.8
Total acidity as malic acid	0.8
Pectin	2.1
Pentosans	1.1
Carbohydrates other than crude fiber (by difference)	31.4
pH	5.1

Calories.—1.3 per gram; 37 per ounce.

Vitamins.—The natural vitamin content is retained in large measure in the manufacturing process by the use of equipment and procedure which exclude incorporation of air; the fruit material is exposed to steam only.

Claims of Manufacturer.—Supplementary to the infant milk diet, and valuable for children and adults on soft diets. Has smooth consistency and supplies desirable bulk without roughness. The straining renders the nutrient content readily available for digestion. Scientifically prepared to retain in high degree the natural flavor, mineral and vitamin values. Packed in enamel lined cans. Requires only warming for serving.

TARTAN BRAND UNSWEETENED EVAPORATED MILK

Distributor.—Alfred Lowry & Bro., Philadelphia.

Packer.—The Defiance Milk Products Co., Defiance, Ohio.

Description.—Unsweetened, sterilized, evaporated milk. The same as Defiance Pure Evaporated Milk, THE JOURNAL, March 3, 1934, page 693.

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SATURDAY, MAY 26, 1934

HYPERPARATHYROIDISM: A CHAPTER IN SUCCESSFUL LABORATORY RESEARCH

A stimulating record of clinical research, recently published in THE JOURNAL,[1] serves as an interesting reminder of how effectively some of the disconcerting manifestations of disease and the "pathologic curiosities" of practical medicine are being explained by improved procedures in laboratories of medicine. To many it may seem strange that in this day "laboratory medicine" needs any apologies or defense. Yet not long ago Mendel[2] of Yale University said that there are today not a few physicians as well as other friends of medicine who, although admitting the noteworthy contributions of animal experimentation, nevertheless urge that its dominant importance is passing. Though the pendulum of enthusiasm for a laboratory innovation may at times swing too far, it soon reaches a stable level. In his defense of scientific experimentation in medicine, Mendel made a vigorous plea that devotees of practical medicine and surgery refrain from unwarranted derogatory attacks on one of the best helps of their profession in the past. It is difficult enough, he added, to fight suffering, disease and death without being obliged to fight the ignorance and prejudices of those who would tie the arms of the laboratory worker. The ultimate objective of all methods of attack on ignorance is the same.

Osteitis fibrosa cystica, commonly called von Recklinghausen's disease, has long been recognized as a chronic progressive disease of the skeleton. One will look in vain for any rational or well founded discussion of its etiology and treatment in all except the most recent textbooks, for it was not until the present decade that the relation of the malady to hyperparathyroidism was clearly established, through the classic observations of Mandl[3] in Vienna and Du Bois[4] and his co-workers in New York. Only a few years ago less than 100 cases of von Recklinghausen's disease had been mentioned in medical literature.[5] The report of Albright, Aub and Bauer[1] presents seventeen proved cases of hyperparathyroidism from a single clinic in the Massachusetts General Hospital in Boston.

What are the main features of the newer knowledge? Foremost is the observation that hyperparathyroidism is usually due to a functioning adenoma of the parathyroid glands. Sometimes there is hyperplasia of all parathyroid tissue. As a result of the increased production of the parathyroid hormone there is a disturbance in the metabolism of calcium and phosphorus. The easily measurable manifestations of this disturbance are an increased serum calcium level, a decreased serum phosphorus level and an increased excretion of both elements in the urine. The ascertainment of these diagnostic features has depended on the discovery of the endocrine function of the glands involved, on methods for the ready clinical estimation of calcium and phosphorus in readily obtained small specimens of blood, on the unraveling of the fundamental features of replacement therapy and dietary control. Every detail of these highly significant and frequently life-saving factors has emanated from the scientific laboratories through the laborious and modest efforts of persons who are sometimes referred to somewhat disparagingly as "research hounds." One may recall that the epithet "book farmer," similarly applied to progressive students of agriculture a generation ago, has long since been abandoned.

The relations of parathyroid function to calcium and phosphorus may bring the reminder that about 85 per cent of the mineral matter of bone, or at least three fourths of the entire ash of the body, consists of calcium phosphate. Probably more than 99 per cent of the calcium in the body belongs to the bones, the remainder occurring as an essential constituent of the soft tissues and body fluids. That is why any influence such as hyperfunction of the parathyroids with its attendant hypercalcemia leads so characteristically to demineralization of the bones. They become porous and filled with osteoclasts. There are drastic secondary consequences. The increased mobilization and excretion of calcium and phosphorus in the urine not infrequently lead to the formation of urinary calculi. In some instances the calcium phosphate precipitates occur in the kidney parenchyma and lead to secondary kidney contracture and insufficiency.[6] Again, the replacement of so much of the marrow cavity with fibrous tissue leads to a decrease in the hematopoietic elements and hence occasionally to an anemia and leukopenia.

Despite the fact that the bones are the storehouse for calcium and phosphorus in the body, according to

1. Albright, Fuller; Aub, J. C. and Bauer, Walter: Hyperparathyroidism, J. A. M. A. **102**: 1276 (April 21) 1934.

2. Mendel, L. B.: Scientific Experiment and Medicine, Science **76**: 393 (Nov. 4) 1932.

3. Mandl, Felix: Klinisches und Experimentelles zur Frage der lokalisierten und generalisierten Ostitis fibrosa: B. Die generalisierte Form der Ostitis fibrosa, Arch. f. klin. Chir. **143**: 245, 1926.

4. Hanson, R. R.; Shorr, Ephraim; McClellan, W. S., and Du Bois, E. F.: A Case of Osteitis Fibrosa Cystica (Osteomalacia?) with Evidence of Hyperactivity of the Parathyroid Bodies: Metabolic Study I, J. Clin. Investigation **8**: 215 (Feb.) 1930.

5. Locke, E. A., in Cecil's Textbook of Medicine, ed. 2, Philadelphia, W. B. Saunders Company, 1930.

6. Albright, Fuller; Baird, P. C.; Cope, Oliver, and Bloomberg, Esther: Studies on the Physiology of the Parathyroid Glands: IV. Renal Complications of Hyperparathyroidism, Am. J. M. Sc. **187**: 49 (Jan.) 1934.

Albright, Aub and Bauer, the teeth do not take part in the generalized decalcification. They may fall out because of disease of the jaws, but they themselves remain well calcified. This is brought out strikingly by roentgenograms in which the well calcified teeth stand out sharply against the poorly calcified jaws. This failure of the teeth to become decalcified is featured as strong evidence against their being a reserve supply of calcium.

The management of the parathyroid tumors presents a real challenge to the modern surgeon. As Albright, Aub and Bauer say, before undertaking an operation he must be more than just "a good thyroid surgeon." He should know the normal and possible aberrant situations of the parathyroid glands; he must be familiar with their reddish brown coloration and smooth surface (in contrast to the granular surface of the thyroid); he must be able to differentiate them from lymph nodes, collections of fetal fat and thyroid lobules, and he must be prepared to continue the search, even if this leads him into the anterior mediastinum. For the latter reason the surgeon must not undertake the operation until he is convinced by the blood chemistry that a tumor is present. There is no time like the initial operation to find the tumor. The hypoparathyroidism following the removal may be dangerous, with its attendant tetany. A dietary regimen including calcium and phosphorus in abundance may prevent decalcification and thus improve the bones, yet may need to be avoided because of the possibility of renal damage. These features suffice to indicate the acumen and modern knowledge that are requisite for the management of hyperparathyroidism. The Boston investigators stress the point that, whereas the disease can hardly be called common, it must frequently be considered when any of a multiplicity of symptoms is present. Failure to make the diagnosis is regrettable in that the treatment for it is highly successful.

PSITTACOSIS

Although psittacosis was known prior to 1929, the epidemic of that year and the attendant publicity brought the disease to the attention of almost every physician and health officer in the country. There have been repeated occurrences during the intervening years, but the fact that the mode of transmission of the disease and the susceptibility of various species have been discovered and practical methods of control have been instituted indicate that progress has been made in the attempt to eliminate it as a factor in our national health. Indeed, a recent report describes the successful vaccination of human patients against the disease. The present status of psittacosis from various points of view has recently been summarized by Hoge.[1] The incidence of the disease is generally decreasing; whereas in 1932 there were seventy-six cases and seven deaths, in 1933 only fifteen cases, of which four were fatal, came to the attention of the authorities. This year, however, up to the middle of March, twenty-seven cases and eleven deaths were recorded. As the epidemic of 1929-1930 was shown to have its origin in infected parrots, the disease was called "parrot fever." It has been demonstrated, however, that the most important vector of psittacosis is the shell parrakeet, principally because this bird enters into commerce in large numbers. On the other hand, it is known that all or nearly all birds belonging to the family Psittacidae are actual or potential carriers of the disease. Up to the present, a large proportion of the human cases of psittacosis have occurred in California. This circumstance is correlated with the widespread occupation of breeding and rearing psittacine birds in that state. The fact that all reported human cases of the disease occurring in the United States have been traced to California-bred birds indicates the importance of strict control of the aviaries in those sections where the climate is favorable to the rearing of these birds.

Psittacosis is caused by a filtrable virus that appears to be readily passed from an infected bird to a healthy one, young birds being more susceptible than old birds. Apparently the virus can pass from birds to man by direct contact or through the lungs. The period of incubation is usually about twice as long in the birds (approximately fifteen days) as in human patients; in man the disease simulates pneumonia but with a marked dissociation of pulse rate and temperature. The virus can usually be demonstrated in the sputum and, when injected into mice, produces the disease in these animals. In the tissues of man, mice and bird with psittacosis there usually occur the so-called L. C. L. bodies, which can be stained and observed microscopically and which may be one form assumed by the virus in a developmental cycle.

Psittacosis presents a unique problem in public health control. On the one hand, the known facts definitely connect the presence of infected psittacine birds with the spread of the disease to human beings. On the other hand, the fact that most of those rearing birds are in business in a small way, together with the hesitation in accepting advice resulting in financial loss, has rendered regulation difficult. However, certain states and Hawaii have already prohibited the importation of parrakeets. As it has been found that psittacosis is endemic in California aviaries, both federal and state regulations have been formulated to permit the shipment only of birds that are certified to be free from the disease by the state health officer.

Despite the difficulties arising from lack of fundamental knowledge of the disease as well as from opposition to regulation, the results of the efforts to control psittacosis have been favorable. However, there is presented here a situation of extremely grave

1. Hoge, V. M.: Pub. Health Rep. 49:451 (April 6) 1934.

possibilities. Hoge states that "few diseases can claim a more diversified list of susceptible species." Recently the chicken has been shown to be susceptible to the disease both by inoculation and by feeding infected material. The widespread use of poultry as human food and the necessary contact with chickens in the egg industry emphasize the great potential danger from this source alone. The accumulating facts indicate that in uncontrolled psittacosis there exists a serious menace both to the public health and to commerce.

Current Comment

ARTIFICIAL RESPIRATION MAINTAINED FOR TWO YEARS

In this day of complex mechanical devices for the care of the sick, it is refreshing to observe that the simple things at hand sometimes serve the purpose well. A unique example is found in a case of progressive muscular atrophy, recently reported by Kerridge,[1] in which artificial respiration has been maintained for two years. A man, aged 63, gradually lost control of various groups of muscles until he was unable to breathe without assistance. In the first serious attack of difficult breathing, which occurred when he was riding in a car, he was relieved by companions pressing rhythmically on the front of his chest. From this time he was treated by his family in the same way, whenever respiratory difficulty recurred. The attacks gradually lengthened and in less than a year he was having artificial respiration performed continuously day and night by relatives and nurses. Sir William Bragg, the physicist, a friend of the patient, suggested bandaging a football bladder to the patient's chest and connecting it through a rubber tube to another bladder fixed between two hinged boards so that it could be moved rhythmically by the foot or with a lever. This apparatus was effective, but the bladders wore out in three days. They were replaced by a hot water bottle, which lasted three weeks, when it had to be patched or replaced. The boards were used until the hinges wore loose. A more substantial apparatus made on the same principle proved to be too hard for the nurses to operate. Then a small hydraulic machine was constructed, worked off the main water supply, which alternately compressed and relaxed a rubber bellows—except on one occasion when the water froze in the pipes. This apparatus has been keeping the patient alive since October 1933. For a few hours each day, the manual method of artificial respiration is used to relieve the constriction of the bandage about the patient's chest. Recently Kerridge has replaced the hot water bottle and binder by a linen belt interlined with a bag of rubber of a size to surround the front and back of the left side of the chest. The patient has worn this apparatus comfortably and continuously for weeks. A pressure in the bag of nine-tenths pound per square inch, produced twenty-two times a minute, has been sufficient. This almost completely paralyzed patient is active mentally, although wasted. He lies on his right side almost continuously. His appetite is good. There have been no bed sores. When artificial respiration was stopped for one minute, movement did not occur in the thorax or diaphragm. Prior to the development of progressive muscular atrophy, the patient led an active outdoor life and had no serious illness. This interesting case shows that positive pressure can be used without apparent ill effects for a long time. A striking feature of the case, which Kerridge notes, is the comfort of the patient and the simplicity of the mechanism used. The patient carries on his normal intellectual pursuits at home. In this issue of THE JOURNAL, some papers presented at the second annual meeting of the Society for the Prevention of Asphyxial Death are abstracted. The case report by Kerridge casts a bright glow on the great field in life saving which that society has undertaken to illuminate.

1. Kerridge, Phyllis M. Tookey: Artificial Respiration for Two Years, Lancet **1**:786 (April 14) 1934.

THE INORGANIC STRUCTURE OF BONE

The biochemist's conception of the nature of bone and related structures has been developed to an increasingly clear understanding in recent years. The definition of bone as a tissue consisting of water and about equal parts of organic and inorganic material has become obsolete. The inorganic constituents of bone can be regarded as consisting almost entirely of a mixture of calcium phosphate and carbonate, in the proportion of three to (somewhat less than) one, built together into some complex along with traces of the corresponding magnesium compounds and of chloride and fluoride. No definite clue to the constitution of this complex has as yet been obtained, though the proportions of the constituents are constant.[1] By roentgen examination and by chemical analysis it seems to be similar, as far as its inorganic constituents are concerned, to the mineral dahlite, though there is no complete agreement on this feature. The application of x-ray diffraction methods, which have afforded so much new information in other fields of scientific research, seems destined to extend the knowledge of the structure of bone not only in health but also in disease of the osseous tissues. Janet H. Clark[2] of Johns Hopkins University has produced x-ray diagrams of bones and teeth. She believes that inorganic crystals of apatite are present in bone oriented so as to give fiber structure in longitudinal section. There are also unoriented crystals present which are attributed to organic crystals of collagen or ossein. In a more recent study, by Clark and Mrgudich[3] of the Department of Chemistry at the University of Illinois, the longitudinal orientation of the inorganic micelles of bone has been confirmed. In rickets this preferred orientation seems to be to a large extent destroyed. The Illinois observers look on the attack of rickets as a breaking down of the organic "cement" (collagen or

1. Cameron, A. T.: A Textbook of Biochemistry, New York, Macmillan Company, 1933.
2. Clark, Janet H.: A Study of Tendons, Bones, and Other Forms of Connective Tissue by Means of X-Ray Diffraction Patterns, Am. J. Physiol. **98**: 328 (Sept.) 1931.
3. Clark, G. L., and Mrgudich, J. N.: An X-Ray Diffraction Study of the Effect of Rachitis upon the Structural Characteristics of Bone, Am. J. Physiol. **108**: 74 (April) 1934.

ossein) which holds the inorganic crystals in their normal oriented position. After this "cement" has been decomposed, the inorganic material, although remaining chemically unchanged, loses its preferred orientation and the bone loses its resistance to strain in much the same manner as a tied bundle of sticks loses its supporting strength when untied and scattered. On healing, the inorganic micelles of a rachitic bone do not regain their preferred orientation, although the organic constituent assumes the same form as in the normal bone. Clark and Mrgudich conclude that any theory involving equilibrium between serum calcium and bone calcium must take into account the more fundamental equilibrium between serum and the organic constituent of bone.

Association News

THE CLEVELAND SESSION

Visit to Home of George Edward Follansbee

The home of Dr. and Mrs. George Edward Follansbee will be open to visiting women guests at the American Medical Association convention at Cleveland on Tuesday, Wednesday and Thursday afternoons of the convention week from 2 to 5 p. m. Visitors will enjoy Mrs. Follansbee's nationally famous collection of Americana. Tea will be served.

Guests desiring to visit the Follansbee home will be expected to leave notification at the women's registration desk in the Hotel Carter.

Golf for Pediatricians

Members of the Section on Pediatrics are urged by the Cleveland committee to bring their golf clubs. A special event has been scheduled for the members of the section at the Country Club. Details will be announced at the section meetings.

Rotary Club Luncheon

The regular luncheon of the Cleveland Rotary Club will be held Thursday noon, June 14, in the Rainbow Room of the Carter Hotel. All Rotarians are invited to attend.

Railroad Rates

The Transcontinental and Western Passenger Associations state that fare and one third of the current one-way first class fares is lower than summer excursion fares from New Mexico and that selling dates of tickets from New Mexico will be June 4 to 12 inclusive.

MEDICAL BROADCASTS

National Broadcasting Company

The American Medical Association broadcasts on a coast-to-coast network each Monday afternoon from 3:45 to 4 o'clock, Central daylight saving time (3:45 Eastern standard time, 2:45 Central standard time, 1:45 Mountain standard time and 12:45 Pacific standard time).

The next three broadcasts will be as follows:

May 28. The Family Medicine Chest, Morris Fishbein, M.D.
June 4. Highway Hazards, W. W. Bauer, M.D.
June 11. The Common Cold, Wilson G. Smillie, M.D. (from Cleveland).

The National Broadcasting Company talks will be discontinued for the summer with the talk from Cleveland on June 11.

Columbia Broadcasting System

The Association broadcasts on a Western network of the Columbia Broadcasting System each Thursday afternoon on the Educational Forum from 4:30 to 4:45, Central daylight saving time. The June 14 broadcast will be from Cleveland at 4 to 4:15 p. m., Eastern daylight saving time. The next three broadcasts will be as follows:

May 31. Health Slogans, W. W. Bauer, M.D.
June 7. The First Month, W. W. Bauer, M.D.
June 14. Medicine Marching Forward, Morris Fishbein, M.D.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ALABAMA

Clinical Meeting.—Dr. Joseph H. Griffin, Bainbridge, Ga., was elected president by the John A. Andrew Clinical Society at its twenty-third annual clinic at Tuskegee Institute, April 8-14. Papers were presented by the following physicians, among others:

Richard H. Miller, Boston, Diagnosis of Acute Abdominal Emergencies.
Thomas M. Smith, Chicago, Coronary Occlusions.
James L. Hall, Chicago, Intestinal Parasites and Infections.
Roman T. Adair, Montgomery, Diagnosis and Treatment of Bronchial Asthma.
Roscoe C. Giles, Chicago, Diagnosis and Treatment of Osteomyelitis.
Walter G. Crump, New York, Science of Medicine As It Is Related to the Art of Medicine.
Ralph H. Scull, Chicago, Common Fungus Diseases of the Skin and Preliminary Report on Work Done with Trichophyton at Rush Medical College.
Alan P. Smith Jr., Tuskegee, Syphilis of the Parenchyma of the Brain.
John E. Hunter, Lexington, Ky., Intestinal Obstruction.
Lee O. Miller, Asheville, N. C., Reduction of Blood Pressure Without Injury.
Clarence Leon Wilson, Chicago, Sterility in the Female: Etiology, Diagnosis and Treatment.
Ulysses G. Dailey, Chicago, Present Status of Treatment of Hyperthyroidism.
John W. Chenault, Chicago, Intervertebral Disk and Spinal Disabilities.
Willard M. Lane, Washington, D. C., Appendicitis, with Special Reference to the Disease in Women.
John H. Hale, Nashville, Tenn., Rupture of the Meningeal Artery with a Depressed Fracture of the Brain.
Frank Jones, Washington, D. C., A Case of Nephrobronchial Fistula and A Case of Elephantiasis of the Scrotum Due to Filaria Bancrofti.
Henry A. Callis, Washington, D. C., Dehydration.
Toussaint P. Tildon, Tuskegee, Ala., Spontaneous Cardiac Rupture, with Report of Case.

Clinics and demonstrations in the various specialties were conducted.

ARKANSAS

Society News.—At a meeting of the Benton County Medical Society in Siloam Springs, March 8, speakers were Drs. Davis W. Goldstein and James C. Ogden, Fort Smith, on "Malignancies of the Skin" and "The Eye in Relation to General Medicine," respectively.——Among others, Dr. Johnson J. Baker, Magnolia, spoke before the Sixth Councilor District Medical Society in Texarkana, March 8, on "Treatment of Malaria Other Than Quinine."——Speakers before a joint meeting of the Sebastian and Jasper County medical societies, March 13, included Dr. Samuel A. Grantham, Joplin, Mo., on a method of spinal fusion.——The Second Councilor District Medical Society was addressed in Batesville, April 15, among others, by Drs. Wells F. Smith, Little Rock, and Martin C. Hawkins Jr., Searcy, on traumatic epilepsy and uterine bleeding, respectively.

CALIFORNIA

The Health Insurance Racket.—A charge of selling insurance without a permit against John C. Moore, San Francisco, head of one of the racketeering health insurance associations in California, was dismissed, April 24, on the grounds of insufficient evidence. The state board of medical examiners was not consulted when Moore's trial was called, and it was held when the special investigator for the board was out of town. Moore operated the "Pacific International Health Association" at 127 Montgomery Street, San Francisco. This organization had previously been known as the International Metropolitan Health and Accident Association but was changed following the objection by the Metropolitan Life Insurance Company to the word "Metropolitan." An application given by Moore to the investigator for the board read "United States Agency—Pacific International Health Association—medical-surgical-dental-hospital-ambulance-laboratory-optometry services—Emergency Expense—Life—Accident—Health Protection." It purports to offer medical and surgical benefits "by any duly licensed physician in any sickness or accident." According to the state medical board, investigation indicates this to be "sales talk," because, when the purchaser receives his contract, it is said to specify therein that the professional service to which he is entitled is limited to a physician chosen by the company. It is pointed out that a holder of a contract, as a complainant, having accepted it, is precluded from bringing in as evidence the application which he signed should he begin any legal

action. He is further penalized because that portion of the application which he signs is immediately torn from the other portion of the application so that, in case of controversy, it is later impossible to connect the promises made in the application with the phraseology of that portion of the contract which has been signed by the applicant. Harry Kramer, head of five of these health associations, recently received a sentence of from one to two years in San Quentin Prison and a fine of $5,000 (THE JOURNAL, March 28, p. 1091).

COLORADO

Clinic for Venereal Diseases.—The Pueblo County Medical Society recently appointed a committee on venereal diseases to educate the public to the need of a free clinic for the treatment of these diseases. About a year ago the state venereal clinic, administered by the state health board, was discontinued in Pueblo and other cities of the state, thus putting an end to the supervised treatment of these patients. It is hoped that the committee's work and public opinion will bring about the establishment, by legislative action, of one health board with definite duties not only for the treatment of the indigent, but for the entire public health problem. It was pointed out that, until this is assured, the Child Welfare and Public Health Association of Pueblo will endeavor to seek county and community chest funds to continue the free clinic.

DELAWARE

Health at Wilmington.—Telegraphic reports to the U. S. Department of Commerce from eighty-six cities with a total population of 37 million, for the week ended May 12, indicate that the highest mortality rate (18.6) appears for Wilmington and that the rate for the group of cities as a whole was 11.9. The mortality rate for Wilmington for the corresponding week of last year was 16.6, and for the group of cities, 10.8. The annual rate for eighty-six cities for the nineteen weeks of 1934 was 12.5, as against a rate of 11.9 for the corresponding period of the previous year. Caution should be used in the interpretation of these weekly figures, as they fluctuate widely. The fact that some cities are hospital centers for large areas outside the city limits or that they have a large Negro population may tend to increase the death rate.

DISTRICT OF COLUMBIA

Medical Bills in Congress.—S. 3479, proposing to amend the healing arts practice act of the District of Columbia, has been reported to the Senate, without amendment (S. Rept. 990). The bill would amend the existing law (1) by substituting the corporation counsel of the District of Columbia for the United States district attorney as a member of the Commission on Licensure to Practice the Healing Art and (2) by transferring to the corporation counsel for the District of Columbia, from the United States district attorney, the duty of instituting legal proceedings for the enforcement of the act.

ILLINOIS

Society News.—Dr. William C. Danforth, Evanston, Ill., addressed the Vermilion County Medical Society in April on "Symptoms and Treatment of Fibroids."——At a meeting of the Madison County Medical Society in Madison, April 6, Dr. Lee Pettit Gay, St. Louis, spoke on allergy.——Speakers before the Douglas County Medical Society, April 28, included Drs. Don W. Deal on acute conditions of the abdomen; Hermon H. Cole, prevention of heart disease, and Walter G. Bain, general relation of sinuses and chest conditions. All are from Springfield.——Dr. Max Thorek, Chicago, addressed the Warren County Medical Society at Monmouth, May 2, on "An Electrosurgical Method of Obliterating the Gallbladder."

Chicago

Hospital News.—The cornerstone of the new $1,000,000 Chicago Policlinic Hospital was laid, May 11. The institution, formerly known as Henrotin Hospital, will be six stories high, with a capacity of 100 beds. The old hospital was erected in 1907.

Alumni Reunion Rush Medical College.—The annual reunion of Rush Medical College will be held in Chicago, June 8 and 9, in order to permit visiting alumni to attend this reunion and to go to the annual meeting of the American Medical Association in Cleveland the week following. Special clinics will be held for the visiting alumni on June 8 and 9. The annual banquet of the Rush Faculty and Alumni will be held at 6:30 Saturday evening, June 9, at the Palmer House. Special class reunions of the tenth, twentieth, thirtieth, fortieth and fiftieth year classes will be held Friday evening, June 8, at the Palmer House.

IOWA

Society News.—The eighth Iowa Conference on Child Development and Parent Education will be held in Iowa City, June 19-21. Dr. William E. Blatz, director, St. George's School of Child Study, Toronto, Canada, will be among the speakers. Details may be obtained from the Iowa Child Welfare Research Station, State University of Iowa, Iowa City.——The Cerro Gordo County Medical Society was addressed, May 14, by Dr. Verne C. Hunt, Los Angeles, on "Cancer of the Breast."——Dr. James W. Young, Newton, discussed socialized medicine before the Jasper County Medical Society in Newton, April 3.——At a meeting of the Jefferson County Medical Society, April 18, Dr. Robert O. Hughes, Ottumwa, spoke on diagnosis of diseases of children.——The Johnson County Medical Society was addressed, April 4, by Dr. Harry L. Alexander, St. Louis, on "Allergy from the Standpoint of the General Practitioner."——Dr. Charles B. Taylor, Ottumwa, was guest of honor at a meeting of the Keokuk County medical and dental associations, April 16, in Sigourney. The guest speaker was Ralph A. Fenton, D.D.S., Iowa City, on "Focal Infections."——Dr. Jack V. Treynor, among others, addressed the Pottawattamie County Medical Society in Council Bluffs, April 26, on "Indications for Tracheotomy."——At a meeting of the Scott County Medical Society in Davenport, Dr. David S. Hillis, Chicago, discussed obstetrics and the general practitioner.

KENTUCKY

Extension Course in Russellville.—Drs. Malcolm D. Thompson and Winston U. Rutledge, Louisville, were the lecturers in an extension course under the auspices of the Kentucky State Medical Association at Russellville, May 9, with the Logan County Medical Society as host. Dr. Rutledge discussed dermatologic subjects and Dr. Thompson, treatment of injuries.

Dr. Jones Returns to Utah.—Dr. John L. Jones, Louisville, director of the bureau of epidemiology of the state board of health for the past six years, has resigned to become assistant health officer of Utah, his native state. Dr. Jones was honored with a farewell dinner at the Pendennis Club, April 24, at which guests included the staff and members of the board of health and representatives of county health departments, the city health department, medical societies and auxiliaries. Dr. Arthur T. McCormack, state health officer, presided and addresses were made by Drs. Hugh R. Leavell, city health commissioner; John D. Trawick, county health officer; Louis Frank, Philip F. Barbour, all of Louisville; Dr. Robert H. Crowley, Berea, and Dr. Jones. A silver service was presented to Dr. and Mrs. Jones. Dr. Martin H. Jensen, formerly assistant director of the bureau of county health work, has been appointed to succeed Dr. Jones.

MARYLAND

State Medical Election and Meeting.—Dr. John M. T. Finney, Baltimore, was elected president of the Medical and Chirurgical Faculty of Maryland at its one hundred and thirty-sixth annual meeting in Baltimore, April 24-26. Vice presidents elected are Drs. Louis Hamman, Baltimore, James McFaddin Dick, Salisbury, and Victor D. Miller, Hagerstown. Dr. Walter D. Wise, Baltimore, was reelected secretary and Dr. Charles Emil Brack, Baltimore, was reelected treasurer. Dr. George O. Sharrett, Cumberland, delivered his address as retiring president on "Our Duty and Responsibility." The Trimble lectures were presented by Dr. John A. Kolmer, professor of medicine, Temple University School of Medicine, Philadelphia, on "Etiology, Diagnosis and Treatment of Septicemia," and Dr. Fred W. Rankin, Lexington, Ky., "The Development of Surgery of the Colon and Rectum." Other speakers on the scientific program included:

Dr. William H. Pearce, The Sphere of State Medicine.
Dr. Cyrus F. Horine, Distribution of Physicians in Maryland Counties.
Dr. Max Kahn, Irradiation of Radiosensitive Tumors.
Dr. Dean Lewis, President, American Medical Association, Diagnosis and Prognosis of Gastro-Intestinal Tumors.

A round table luncheon was held, April 25, and included among others, the following speakers: Drs. Charles R. Austrian, on "Pneumonia"; Maurice C. Pincoffs, "Hyperthyroidism and Hypothyroidism in Relation to the Heart. Recent Use of Thyroidectomy in the Therapy of Chronic Heart Disease"; Esther L. Richards, "Strains of Life in Relationship to 'Nerves' and Other Forms of Poor Mental Health," and Henry J. Walton, "Educational and Professional Aspects of the Practice of Radiology."

New Marine Hospital.—A new U. S. Marine Hospital was recently dedicated at Baltimore. Influenced by the design of the Johns Hopkins University group of buildings, the architecture generally follows the Georgian style. A dark granite base is used for the main buildings with rusticated limestone courses between the first and second floors. The other exterior facing is of sand finish red colonial brick in a full range of color with limestone trim. Black granite was used at the three main entrance doorways with bronze exterior bracket lamps. The interior of the main building is of typical hospital finish. Administrative offices, the pharmacy, eye, ear and nose clinic, clinical laboratory, staff room and hospital library are located on the first floor of the transverse wing, while on the first floor of one of the lateral wings is the dental department, and in the other, small isolation wards. On the first floor of the central wing are located the physical therapy and roentgenray departments. On the second floor of the transverse and lateral wings are located wards and private rooms, together with professional and administrative facilities, and the basal metabolism section. This floor is for medical patients only. The second floor of the central wing contains the kitchen and dining rooms. The third floor of the transverse and lateral

New U. S. Marine Hospital at Baltimore

wings are for surgical patients. The fourth floor of the transverse and lateral wings is used for patients with genito-urinary and venereal diseases. The fifth and sixth floors of these wings are to be utilized for surgical and medical cases, while the seventh floor of the transverse or main wing will be nurses' quarters. The central wing of the basement is used in part for a morgue and autopsy section.

MASSACHUSETTS

Safety Conference.—The first annual New England Safety Conference convened at the Statler Hotel in Boston, April 30-May 1. Included among the speakers on topics of medical interest were Dr. Robert S. Palmer of Harvard Medical School, Boston; Arthur B. Lamb, director, chemical engineering, Harvard University; Dr. Alton S. Pope, director, division of tuberculosis, Massachusetts State Department of Public Health; Dr. Timothy Leary, medical examiner of Suffolk County South; Theodore F. Hatch and Philip Drinker, of the faculty of the Harvard School of Hygiene and Public Health.

Society News.—Dr. Alfred Stengel, Philadelphia, conducted a clinic on pneumothorax in the treatment of pneumonia, April 26, at the Peter Bent Brigham Hospital, Boston.——At a meeting of the Massachusetts Psychiatric Society in Boston, April 20, the speakers were Drs. Julius Loman, Boston, and Clifford D. Moore, Waltham, on "Effects of the Alteration of Posture on the Cerebrospinal Fluid Pressure" and "Mental Disease in a Tuberculosis Sanatorium Population."—— Dr. Abraham Myerson, Boston, addressed the Hampden District Medical Society in Springfield, April 24, on "The Neuroses as the General Practitioner Meets Them."——At the annual meeting of the Worcester North District Medical Society in Fitchburg, April 25, Dr. Andrew R. MacAusland, Boston, gave the annual oration on "Recent Trends in the Treatment of Fractures."

MICHIGAN

Personal.—Dr. William M. Donald has been made head of the department of medicine of Wayne University School of Medicine, Detroit.—— Dr. John J. Prendergast Jr., Detroit, has been named acting superintendent of Receiving Hospital, Detroit, succeeding Dr. Egil T. Olsen, resigned.——Dr. Walter I. Weiner has resigned as medical director of the Oakland County Tuberculosis Sanatorium, Pontiac, on account of ill health.——Dr. William E. McNamara, Lansing, was recently named a member of the state council of health.

District Conference.—The Michigan State Medical Society and the department of graduate medicine of the University of Michigan conducted a conference in the fourteenth councilor district in Adrian, May 10, when the following program was presented:

Prevention and Repair of Birth Injuries to the Mother, Dr. Howard H. Cummings, Ann Arbor.
Differential Diagnosis in Acute Abdominal Disease, Dr. Eugene B. Potter, Ann Arbor.
Diagnosis and Treatment of Pneumonia, Dr. Edward D. Spaulding, Detroit.
Recognition and Management of Speech Defects, Prof. John R. Muyskens, Ann Arbor.

Society News.—The committee on preventive medicine of the Michigan State Medical Society presented the program before the Gogebic County Medical Society at its meeting in Ironwood, May 10; the program of the state medical society, its general principles and applications to counties were discussed by Dr. Ledru O. Geib, Henry F. Vaughan, Dr.P.H., Detroit, and Dr. Garner M. Byington, Battle Creek. Dr. John E. Gordon, Detroit, spoke on "Differential Diagnosis in the Acute Communicable Diseases."—— Dr. Claire L. Straith, Detroit, discussed "Correction of Facial Injuries and Deformities" before the Livingston County Medical and Dental Society, May 4.—— A symposium on diseases of the blood-forming organs was presented at Harper Hospital, Detroit, May 18, by Drs. Russell L. Haden, Cleveland, Raphael Isaacs, Ann Arbor, and Hugo A. Freund, Detroit.

MINNESOTA

"Bone-Setters" Warned to Stop Practicing.—The state board of medical examiners has issued a warning to three unlicensed practitioners of healing, so-called bone-setters, that they are to cease their activities unless they are registered under the Basic Science Law and licensed to practice. These men are: P. D. Heppner, Butterfield; Claus Hiebert, Bingham Lake, and Jacob Goertzen, Mountain Lake. The board asks that any case of treatment subsequent to March 17 by any of these persons be promptly reported to the board at 524 Lowry Medical Arts Building, St. Paul, and action will be taken to force a compliance with the laws of Minnesota.

Society News.—Speakers before the Hennepin County Medical Society, April 11, were Drs. Edward D. Anderson and Paul W. Giessler on "Relationship of the Physician to the Handicapped Child" and "Adjusting the Crippled Child to His Environment," respectively. Dr. Henry Schmitz, Chicago, addressed the society, May 7, on "Early Diagnosis and Treatment of Uterine Carcinoma."—— Dr. Thomas B. Magath, Rochester, Minn., was elected president of the Minnesota Academy of Medicine at its second annual meeting in Rochester, April 21, Walter A. Kenyon, Ph.D., St. Paul, vice president, and Harold K. Wilson, Ph.D., St. Paul, reelected secretary.—— Speakers before the Camp Release Medical Society at Dawson, April 6, were Drs. Thurston W. Weum, Minneapolis, on obstetrics; Myron O. Henry, Minneapolis, fractures, and Charles Bolsta, Ortonville, enforcement of the basic science law.—— Dr. Hugh Cabot discussed "Wartime Reminiscences of the Royal Army Medical Corps" before the sixteenth semiannual meeting of the Minnesota Society of Internal Medicine at Rochester, April 23.

MISSOURI

Personal.—Dr. Herluf G. Lund, St. Louis, was presented with a gold watch at a buffet supper given in his honor, April 6, at the Lenox Hotel, to mark his completion of twenty years as chairman of the staff of Lutheran Hospital. Dr. Theodore P. Brookes presided and the presentation was made by Dr. Phelps G. Hurford.

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action. He is further penalized because that portion of the application which he signs is immediately torn from the other portion of the application so that, in case of controversy, it is later impossible to connect the promises made in the application with the phraseology of that portion of the contract which has been signed by the applicant. Harry Kramer, head of five of these health associations, recently received a sentence of from one to two years in San Quentin Prison and a fine of $5,000 (THE JOURNAL, March 28, p. 1091).

COLORADO

Clinic for Venereal Diseases.—The Pueblo County Medical Society recently appointed a committee on venereal diseases to educate the public to the need of a free clinic for the treatment of these diseases. About a year ago the state venereal clinic, administered by the state health board, was discontinued in Pueblo and other cities of the state, thus putting an end to the supervised treatment of these patients. It is hoped that the committee's work and public opinion will bring about the establishment, by legislative action, of one health board with definite duties not only for the treatment of the indigent, but for the entire public health problem. It was pointed out that, until this is assured, the Child Welfare and Public Health Association of Pueblo will endeavor to seek county and community chest funds to continue the free clinic.

DELAWARE

Health at Wilmington.—Telegraphic reports to the U. S. Department of Commerce from eighty-six cities with a total population of 37 million, for the week ended May 12, indicate that the highest mortality rate (18.6) appears for Wilmington and that the rate for the group of cities as a whole was 11.9. The mortality rate for Wilmington for the corresponding week of last year was 16.6, and for the group of cities, 10.8. The annual rate for eighty-six cities for the nineteen weeks of 1934 was 12.5, as against a rate of 11.9 for the corresponding period of the previous year. Caution should be used in the interpretation of these weekly figures, as they fluctuate widely. The fact that some cities are hospital centers for large areas outside the city limits or that they have a large Negro population may tend to increase the death rate.

DISTRICT OF COLUMBIA

Medical Bills in Congress.—S. 3479, proposing to amend the healing arts practice act of the District of Columbia, has been reported to the Senate, without amendment (S. Rept. 990). The bill would amend the existing law (1) by substituting the corporation counsel of the District of Columbia for the United States district attorney as a member of the Commission on Licensure to Practice the Healing Art and (2) by transferring to the corporation counsel for the District of Columbia, from the United States district attorney, the duty of instituting legal proceedings for the enforcement of the act.

ILLINOIS

Society News.—Dr. William C. Danforth, Evanston, Ill., addressed the Vermilion County Medical Society in April on "Symptoms and Treatment of Fibroids."——At a meeting of the Madison County Medical Society in Madison, April 6, Dr. Lee Pettit Gay, St. Louis, spoke on allergy.——Speakers before the Douglas County Medical Society, April 28, included Drs. Don W. Deal on acute conditions of the abdomen; Hermon H. Cole, prevention of heart disease, and Walter G. Bain, general relation of sinuses and chest conditions. All are from Springfield.——Dr. Max Thorek, Chicago, addressed the Warren County Medical Society at Monmouth, May 2, on "An Electrosurgical Method of Obliterating the Gallbladder."

Chicago

Hospital News.—The cornerstone of the new $1,000,000 Chicago Policlinic Hospital was laid, May 11. The institution, formerly known as Henrotin Hospital, will be six stories high, with a capacity of 100 beds. The old hospital was erected in 1907.

Alumni Reunion Rush Medical College.—The annual reunion of Rush Medical College will be held in Chicago, June 8 and 9, in order to permit visiting alumni to attend this reunion and to go to the annual meeting of the American Medical Association in Cleveland the week following. Special clinics will be held for the visiting alumni on June 8 and 9. The annual banquet of the Rush Faculty and Alumni will be held at 6:30 Saturday evening, June 9, at the Palmer House. Special class reunions of the tenth, twentieth, thirtieth, fortieth and fiftieth year classes will be held Friday evening, June 8, at the Palmer House.

IOWA

Society News.—The eighth Iowa Conference on Child Development and Parent Education will be held in Iowa City, June 19-21. Dr. William E. Blatz, director, St. George's School of Child Study, Toronto, Canada, will be among the speakers. Details may be obtained from the Iowa Child Welfare Research Station, State University of Iowa, Iowa City.——The Cerro Gordo County Medical Society was addressed, May 14, by Dr. Verne C. Hunt, Los Angeles, on "Cancer of the Breast."——Dr. James W. Young, Newton, discussed socialized medicine before the Jasper County Medical Society in Newton, April 3.——At a meeting of the Jefferson County Medical Society, April 18, Dr. Robert O. Hughes, Ottumwa, spoke on diagnosis of diseases of children.——The Johnson County Medical Society was addressed, April 4, by Dr. Harry L. Alexander, St. Louis, on "Allergy from the Standpoint of the General Practitioner."——Dr. Charles B. Taylor, Ottumwa, was guest of honor at a meeting of the Keokuk County medical and dental associations, April 16, in Sigourney. The guest speaker was Ralph A. Fenton, D.D.S., Iowa City, on "Focal Infections."——Dr. Jack V. Treynor, among others, addressed the Pottawattamie County Medical Society in Council Bluffs, April 26, on "Indications for Tracheotomy."——At a meeting of the Scott County Medical Society in Davenport, Dr. David S. Hillis, Chicago, discussed obstetrics and the general practitioner.

KENTUCKY

Extension Course in Russellville.—Drs. Malcolm D. Thompson and Winston U. Rutledge, Louisville, were the lecturers in an extension course under the auspices of the Kentucky State Medical Association at Russellville, May 9, with the Logan County Medical Society as host. Dr. Rutledge discussed dermatologic subjects and Dr. Thompson, treatment of injuries.

Dr. Jones Returns to Utah.—Dr. John L. Jones, Louisville, director of the bureau of epidemiology of the state board of health for the past six years, has resigned to become assistant health officer of Utah, his native state. Dr. Jones was honored with a farewell dinner at the Pendennis Club, April 24, at which guests included the staff and members of the board of health and representatives of county health departments, the city health department, medical societies and auxiliaries. Dr. Arthur T. McCormack, state health officer, presided and addresses were made by Drs. Hugh R. Leavell, city health commissioner; John D. Trawick, county health officer; Louis Frank, Philip F. Barbour, all of Louisville; Dr. Robert H. Crowley, Berea, and Dr. Jones. A silver service was presented to Dr. and Mrs. Jones. Dr. Martin H. Jensen, formerly assistant director of the bureau of county health work, has been appointed to succeed Dr. Jones.

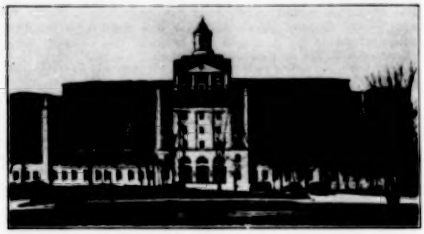
MARYLAND

State Medical Election and Meeting.—Dr. John M. T. Finney, Baltimore, was elected president of the Medical and Chirurgical Faculty of Maryland at its one hundred and thirty-sixth annual meeting in Baltimore, April 24-26. Vice presidents elected are Drs. Louis Hamman, Baltimore, James McFaddin Dick, Salisbury, and Victor D. Miller, Hagerstown. Dr. Walter D. Wise, Baltimore, was reelected secretary and Dr. Charles Emil Brack, Baltimore, was reelected treasurer. Dr. George O. Sharrett, Cumberland, delivered his address as retiring president on "Our Duty and Responsibility." The Trimble lectures were presented by Dr. John A. Kolmer, professor of medicine, Temple University School of Medicine, Philadelphia, on "Etiology, Diagnosis and Treatment of Septicemia," and Dr. Fred W. Rankin, Lexington, Ky., "The Development of Surgery of the Colon and Rectum." Other speakers on the scientific program included:

Dr. William H. Pearce, The Sphere of State Medicine.
Dr. Cyrus F. Horine, Distribution of Physicians in Maryland Counties.
Dr. Max Kahn, Irradiation of Radiosensitive Tumors.
Dr. Dean Lewis, President, American Medical Association, Diagnosis and Prognosis of Gastro-Intestinal Tumors.

A round table luncheon was held, April 25, and included among others, the following speakers: Drs. Charles R. Austrian, on "Pneumonia"; Maurice C. Pincoffs, "Hyperthyroidism and Hypothyroidism in Relation to the Heart. Recent Use of Thyroidectomy in the Therapy of Chronic Heart Disease"; Esther L. Richards, "Strains of Life in Relationship to 'Nerves' and Other Forms of Poor Mental Health," and Henry J. Walton, "Educational and Professional Aspects of the Practice of Radiology."

New Marine Hospital.—A new U. S. Marine Hospital was recently dedicated at Baltimore. Influenced by the design of the Johns Hopkins University group of buildings, the architecture generally follows the Georgian style. A dark granite base is used for the main buildings with rusticated limestone courses between the first and second floors. The other exterior facing is of sand finish red colonial brick in a full range of color with limestone trim. Black granite was used at the three main entrance doorways with bronze exterior bracket lamps. The interior of the main building is of typical hospital finish. Administrative offices, the pharmacy, eye, ear and nose clinic, clinical laboratory, staff room and hospital library are located on the first floor of the transverse wing, while on the first floor of one of the lateral wings is the dental department, and in the other, small isolation wards. On the first floor of the central wing are located the physical therapy and roentgen-ray departments. On the second floor of the transverse and lateral wings are located wards and private rooms, together with professional and administrative facilities, and the basal metabolism section. This floor is for medical patients only. The second floor of the central wing contains the kitchen and dining rooms. The third floor of the transverse and lateral



New U. S. Marine Hospital at Baltimore

wings are for surgical patients. The fourth floor of the transverse and lateral wings is used for patients with genito-urinary and venereal diseases. The fifth and sixth floors of these wings are to be utilized for surgical and medical cases, while the seventh floor of the transverse or main wing will be nurses' quarters. The central wing of the basement is used in part for a morgue and autopsy section.

MASSACHUSETTS

Safety Conference.—The first annual New England Safety Conference convened at the Statler Hotel in Boston, April 30-May 1. Included among the speakers on topics of medical interest were Dr. Robert S. Palmer of Harvard Medical School, Boston; Arthur B. Lamb, director, chemical engineering, Harvard University; Dr. Alton S. Pope, director, division of tuberculosis, Massachusetts State Department of Public Health; Dr. Timothy Leary, medical examiner of Suffolk County South; Theodore F. Hatch and Philip Drinker, of the faculty of the Harvard School of Hygiene and Public Health.

Society News.—Dr. Alfred Stengel, Philadelphia, conducted a clinic on pneumothorax in the treatment of pneumonia, April 26, at the Peter Bent Brigham Hospital, Boston.——At a meeting of the Massachusetts Psychiatric Society in Boston, April 20, the speakers were Drs. Julius Loman, Boston, and Clifford D. Moore, Waltham, on "Effects of the Alteration of Posture on the Cerebrospinal Fluid Pressure" and "Mental Disease in a Tuberculosis Sanatorium Population."—— Dr. Abraham Myerson, Boston, addressed the Hampden District Medical Society in Springfield, April 24, on "The Neuroses as the General Practitioner Meets Them."——At the annual meeting of the Worcester North District Medical Society in Fitchburg, April 25, Dr. Andrew R. MacAusland, Boston, gave the annual oration on "Recent Trends in the Treatment of Fractures."

MICHIGAN

Personal.—Dr. William M. Donald has been made head of the department of medicine of Wayne University School of Medicine, Detroit.—— Dr. John J. Prendergast Jr., Detroit, has been named acting superintendent of Receiving Hospital, Detroit, succeeding Dr. Egil T. Olsen, resigned.——Dr. Walter I. Weiner has resigned as medical director of the Oakland County Tuberculosis Sanatorium, Pontiac, on account of ill health.——Dr. William E. McNamara, Lansing, was recently named a member of the state council of health.

District Conference.—The Michigan State Medical Society and the department of graduate medicine of the University of Michigan conducted a conference in the fourteenth councilor district in Adrian, May 10, when the following program was presented:

Prevention and Repair of Birth Injuries to the Mother, Dr. Howard H. Cummings, Ann Arbor.
Differential Diagnosis in Acute Abdominal Disease, Dr. Eugene B. Potter, Ann Arbor.
Diagnosis and Treatment of Pneumonia, Dr. Edward D. Spaulding, Detroit.
Recognition and Management of Speech Defects, Prof. John R. Muyskens, Ann Arbor.

Society News.—The committee on preventive medicine of the Michigan State Medical Society presented the program before the Gogebic County Medical Society at its meeting in Ironwood, May 10; the program of the state medical society, its general principles and applications to counties were discussed by Dr. Ledru O. Geib, Henry F. Vaughan, Dr.P.H., Detroit, and Dr. Garner M. Byington, Battle Creek. Dr. John E. Gordon, Detroit, spoke on "Differential Diagnosis in the Acute Communicable Diseases."—— Dr. Claire L. Straith, Detroit, discussed "Correction of Facial Injuries and Deformities" before the Livingston County Medical and Dental Society, May 4.—— A symposium on diseases of the blood-forming organs was presented at Harper Hospital, Detroit, May 18, by Drs. Russell L. Haden, Cleveland, Raphael Isaacs, Ann Arbor, and Hugo A. Freund, Detroit.

MINNESOTA

"Bone-Setters" Warned to Stop Practicing.—The state board of medical examiners has issued a warning to three unlicensed practitioners of healing, so-called bone-setters, that they are to cease their activities unless they are registered under the Basic Science Law and licensed to practice. These men are: P. D. Heppner, Butterfield; Claus Hiebert, Bingham Lake, and Jacob Goertzen, Mountain Lake. The board asks that any case of treatment subsequent to March 17 by any of these persons be promptly reported to the board at 524 Lowry Medical Arts Building, St. Paul, and action will be taken to force a compliance with the laws of Minnesota.

Society News.—Speakers before the Hennepin County Medical Society, April 11, were Drs. Edward D. Anderson and Paul W. Giessler on "Relationship of the Physician to the Handicapped Child" and "Adjusting the Crippled Child to His Environment," respectively. Dr. Henry Schmitz, Chicago, addressed the society, May 7, on "Early Diagnosis and Treatment of Uterine Carcinoma."—— Dr. Thomas B. Magath, Rochester, Minn., was elected president of the Minnesota Academy of Medicine at its second annual meeting in Rochester, April 21, Walter A. Kenyon, Ph.D., St. Paul, vice president, and Harold K. Wilson, Ph.D., St. Paul, reelected secretary.—— Speakers before the Camp Release Medical Society at Dawson, April 6, were Drs. Thurston W. Weum, Minneapolis, on obstetrics; Myron O. Henry, Minneapolis, fractures, and Charles Bolsta, Ortonville, enforcement of the basic science law.—— Dr. Hugh Cabot discussed "Wartime Reminiscences of the Royal Army Medical Corps" before the sixteenth semiannual meeting of the Minnesota Society of Internal Medicine at Rochester, April 23.

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Gellhorn, St. Louis, addressed the Kansas City Obstetrical and Gynecological Society, May 3, on "Local Anesthesia in Obstetrics and Gynecology." ——Dr. Raymond E. Teall has been elected president of the Kansas City Society of Ophthalmology and Otolaryngology, and Dr. Andrew W. McAlester III, secretary.

NEW MEXICO

Health Survey Concluded.—A health survey of New Mexico sponsored by the New Mexico Tuberculosis Association and directed by Carl E. Buck, Dr.P.H., of the American Public Health Association, was concluded April 30. A special survey of syphilis in one district was made under the auspices of the American Social Hygiene Association, and blood examinations were made by the survey staff in all the districts visited. Among other results, it was found that active syphilis appears to be about twice as common as active tuberculosis. The morbidity rate of active adult tuberculosis is about twice as high among Anglo-Americans as among Spanish Americans, but the childhood type is twice as high among the Spanish American school children, as revealed by the Mantoux test. Special eye examinations showed that 8.5 per cent of school children had subnormal visual acuity and other symptoms of eye difficulty. The most frequent diseases of the eyes encountered among school children were folliculosis, in 5.4 per cent; conjunctivitis, 3.1 per cent; blepharitis, 1 per cent. Muscle imbalance was noted in 1.9, and symptoms of reading difficulties were observed in 7.8 per cent.

NEW YORK

State Medical Election.—Dr. Frederic E. Sondern, New York, was chosen president-elect of the Medical Society of the State of New York at its annual meeting in Utica, May 15. Vice presidents elected are Drs. Andrew Sloan, Utica, and Leon M. Kysor, Hornell. Dr. Daniel S. Dougherty, New York, was reelected secretary. A silver loving cup was presented to Dr. Marian Craig Potter, Rochester, in recognition of her completion of fifty years in the practice of medicine.

Society News.—The Schenectady County Medical Society celebrated its one hundred and twenty-fourth anniversary with an all day meeting at Ellis Hospital, Schenectady, April 12.——A course of lectures on internal medicine was recently presented by the Tioga County Medical Society for its members, alternately at Waverly and Owego, given by five Brooklyn physicians, as follows: Drs. George H. Roberts Jr., coronary thrombosis; Albert F. R. Andresen, biliary tract diseases; John Hamilton Crawford, cardiac failure; John B. d'Albora, ulcerative colitis, and Eugene R. Marzullo, pernicious anemia. ——Dr. Clarence O. Cheney, New York, addressed the Binghamton Psychiatric Society, May 22, on "Treatment of Behavior Disorders in Children."

New York City

Joint Obstetric Meeting.—The Obstetrical Society of Philadelphia, the Boston Obstetrical Society and the New York Obstetrical Society held a joint meeting in New York, April 10. Clinics were held at New York and Brooklyn hospitals and at an evening meeting at the Hotel Pennsylvania, Dr. Edward A. Schumann, Philadelphia, read a paper on "The Contribution of New York to American Obstetrics and Gynecology."

Portrait of Dr. Senior.—In honor of the twenty-fifth anniversary of Dr. Harold Dickinson Senior as a member of the faculty of New York University and Bellevue Hospital Medical College, an oil portrait of him was recently unveiled in the students' lounge of the college. Dr. Senior is professor of anatomy and director of the anatomic laboratories. Dr. Benjamin Spector, professor of anatomy, Tufts Medical College, Boston, made the presentation on behalf of a committee of alumni and donors and Dr. John H. Wyckoff accepted the gift.

The Voluntary Hospital Emergency.—At the annual luncheon of the United Hospital Fund for distribution of funds, May 14, a committee appointed in April to study the emergency situation of the voluntary hospitals reported that the fifty-six hospitals have a deficit of $2,500,000 for which no provision has been made. Furthermore the hospitals have accounts, bills and notes payable for current expenses amounting to $5,000,000, excluding capital loans. The committee recommended that before a campaign for funds is undertaken, the fund join with the municipal department of hospitals in a thorough survey of the hospital needs and problems of the city. The city, with a population of 7 million, has more than six beds per thousand of population, more than the ratio considered necessary. The beds are not well distributed, however, either as to location or division between municipal and private accommodations. The committee also declared that the voluntary hospitals have not been sufficiently reimbursed for their care of city patients. Checks totaling $450,000 were distributed to the fifty-six hospitals.

NORTH DAKOTA

State Medical Meeting in Fargo.—The North Dakota State Medical Association will hold its annual session in Fargo, May 28-29, under the presidency of Dr. Jesse W. Bowen, Dickinson. According to the tentative program, guest speakers will be:

Dr. Walter L. Bierring, Des Moines, Iowa, President-Elect, American Medical Association, Heart Disease.
Dr. Edward Starr Judd, Rochester, Minn., Surgical Treatment of Cancer of the Stomach.
Dr. Albert M. Snell, Rochester, Minn., Clinical Aspects of Gastric Cancer.
Dr. Ray Morton Balyeat, Oklahoma City, Allergy.
Dr. Ernest M. Hammes, St. Paul, Cerebral Hemorrhage.
Dr. Edwin F. Robb, Minneapolis, Poliomyelitis.
Dr. Wallace H. Cole, St. Paul, Arthritis.

Drs. Judd, Snell and Byrl R. Kirklin, Rochester, Minn., will conduct a gastro-intestinal clinic the first day; Drs. Robb and Cole, clinics on pediatrics and fractures, respectively, the second day. North Dakota physicians who will appear on the program include:

Dr. George C. Foster, Fargo, Bronchoscopy.
Dr. Victor J. LaRose, Bismarck, Significance of Genito-Urinary Bleeding.
Dr. John H. Moore, Grand Forks, Safer Motherhood.
Dr. Julius O. Arnson, Bismarck, Cardiac Arrhythmia.

OHIO

Alpha Omega Alpha Lecture.—Dr. Francis Peyton Rous of the Rockefeller Institute for Medical Research, New York, delivered the Alpha Omega Alpha Lecture at the Institute of Pathology of Cleveland, May 7, on "Studies on the Etiology of Tumors."

Society News.—Drs. Charles T. Souther and Carl W. Koehler, Cincinnati, addressed the Clermont County Medical Society, Owensville, April 18, on "Anastomosis of the Large Bowel" and "Indications for X-Ray Therapy," respectively. ——Dr. Robert C. Austin, Dayton, addressed the Auglaize County Medical Society on intestinal obstruction, April 12, at Lake St. Marys.

Ohio State Alumni Meeting in Cleveland.—Alumni of Ohio State University College of Medicine will meet in Cleveland during the annual session of the American Medical Association, at the Hollenden Hotel, Wednesday evening, June 13, at 6 o'clock. Dr. John H. J. Upham, Columbus, dean of the college of medicine, will preside, and Mr. W. N. King, Cleveland, president of the Ohio State University Alumni Association, will give an address of welcome. Mr. John Fullen, secretary of the alumni association, and Dr. Russel G. Means, Columbus, are in charge of arrangements.

PENNSYLVANIA

Optometrist Convicted.—Listed in 1932 Blue Book of Optometrists under Allentown, Pa., H. O. Ulrich, optometrist, was convicted in the Dauphin County court, March 23, of the illegal practice of medicine. Ulrich paid the costs of prosecution, repaid the victim $45 and served thirty days in the Dauphin County prison.

Society News.—Dr. Francis S. Chambers, Elizabethtown, addressed the Dauphin County Medical Society, Harrisburg, May 1, on "Principles Underlying the Prevention of Deformities in Children."——Dr. Leonard G. Rowntree, Philadelphia, addressed the Harrisburg Academy of Medicine, May 15, on recent advances in knowledge of the endocrine glands.——At the final meeting for the season of the Allegheny County Medical Society, May 15, the graduating class of the University of Pittsburgh School of Medicine and interns finishing their services in Pittsburgh hospitals were guests. Addresses were made by Dr. John W. Dixon, Wilkinsburg, on "Management of Inflammation" and Gerald C. North, Ph.D., research assistant of the Wisconsin Alumni Research Foundation, Madison, on "Irradiated Vitamin D Milk."

Philadelphia

Portrait of Dr. Rugh.—The senior class of Jefferson Medical College presented to the college, April 26, an oil portrait of Dr. James T. Rugh, James Edwards professor of orthopedic surgery. Dr. Rugh was graduated from Jefferson forty-two years ago and has taught orthopedic surgery there for forty-one years. Dean Ross V. Patterson accepted the gift.

Seminars on Physical Therapy.—The Philadelphia County Medical Society presented the sixth course of graduate seminars during the week of April 30-May 4. Lecturers were as follows:

Dr. William Schmidt, Fever Therapy.
Dr. William T. Johnson, Physical Therapy in Peripheral Paralysis.
Dr. John R. Moore, Physical Therapy in Orthopedics.
Dr. Valentine William Murray Wright, Physical Therapy in Fractures.
Dr. Josef B. Nylin, Hydrotherapy.
Dr. William Bates, Influence of Posture on Disease.
Dr. Frank H. Krusen, Light Therapy.
Dr. Lewis C. Scheffey, Diathermy in Pelvic Inflammatory Disease.
Dr. Joseph C. Doane, Histamine Iontophoresis in Treatment of Vasospastic Conditions.
Dr. Nathaniel W. Winkelman, Physical Therapy in Neurology.

Society News.—A symposium on rheumatic fever was presented by members of the medical department of the University of Pennsylvania before the Philadelphia County Medical Society, May 9; speakers were Drs. William D. Stroud, John C. Gittings, George M. Coates and Oliver H. Perry Pepper. ——Drs. Isidor S. Ravdin and Charles C. Wolferth, among others, addressed the Philadelphia Academy of Surgery, May 7, on "Immediate Results of the Treatment of the Congestive Heart by Complete Ablation of the Thyroid Gland." —— Dr. Richard E. Shope of Rockefeller Institute, New York, among others, addressed the Pathological Society of Philadelphia, May 10, on "Results of the Study of Swine Influenza and Their Possible Relation to the Human Disease."

SOUTH CAROLINA

State Medical Election.—Dr. Samuel E. Harmon, Columbia, was named president-elect of the South Carolina Medical Association at the annual meeting in Charleston, May 1-3, and Dr. William Egleston, Hartsville, was installed as president. Dr. Edgar A. Hines, Seneca, was reelected secretary for the twenty-fifth year. Florence was selected for the place of the 1935 meeting.

UTAH

Appendicitis Mortality Rate.—The Salt Lake County Medical Society has recently launched a campaign in cooperation with the Salt Lake City Board of Health to reduce the mortality from appendicitis in Salt Lake City. In 1933 the rate was 4.4 per hundred thousand of population. Two questions have aroused interest: (1) Is there an unusual incidence of appendicitis in the vicinity? and (2) Do any local conditions cause delay in operation? A campaign to warn the public against taking laxatives for abdominal pain and to urge prompt medical attention has been begun. In addition, surgeons have been asked to fill out a questionnaire on all cases seen by them and incorporate it into the hospital records. It is hoped that this procedure will supply a mass of data that will permit evaluation of the factors that make for success or failure in treatment. Dr. John F. Sharp is chairman of the committee on appendicitis mortality.

VIRGINIA

Summer Courses.—The University of Virginia Department of Medicine, Charlottesville, announces courses in medical sciences for the summer quarter, June 18 to July 28, intended primarily for medical students who desire to make a review. Subjects included are histology, embryology, anatomy, topographic anatomy, anatomy of the human nervous system, biochemistry, physiology, medical bacteriology, pathology, pharmacology and mental hygiene.

New Roentgen Ray Department.—Fourteen rooms in the Norfolk Protestant Hospital have recently been equipped as an x-ray unit, known as the F. S. Royster Memorial, the gift of the children of Mr. Royster. A high voltage therapy unit with a capacity of 220,000 volts has been installed and there are special rooms for fluoroscopy and cystoscopy in addition to the equipment for making roentgenograms. Provision for light therapy and hydrotherapy has also been made in the new section, and electrocardiography will also be done there.

WEST VIRGINIA

Society News.—Dr. James L. Blanton, Fairmont, addressed the Monongalia County Medical Society, Morgantown, April 3, on acute anterior poliomyelitis.——Drs. Hugh G. Thompson and Moritz F. Peterson discussed diabetes at a meeting of the Kanawha Medical Society, Charleston, April 10.——Dr. John H. Neff, University, Va., addressed the Ohio County Medical Society, Wheeling, April 13, on "Malignant Tumors of the Kidney." Dr. Carl H. Lenhart, Cleveland, addressed the society, Wheeling, March 30, on pathology and therapy of peritonitis.——Dr. William Dameshek, Boston, addressed the annual meeting of the medical societies of the sixth district, Charleston, March 27, on "Primary Hypochromic Anemia." ——Dr. Ray C. Otte, Wellsburg, addressed the Brooke County Medical Society, April 11, on varicose veins.——Dr. Henry Wald Bettman, Cincinnati, presented a paper on diagnosis and treatment of duodenal ulcer before the Cabell County Medical Society, Huntington, April 12.——Drs. Ralph M. Fisher and Harvey M. Andrew addressed the Lewis County Medical Society at a meeting at Weston State Hospital, March 13, on "Cardiac Physiology" and "Myocardial Degeneration," respectively. —— Dr. Albert Graeme Mitchell, Cincinnati, addressed the Parkersburg Academy of Medicine, April 3, on nephritis in children.

GENERAL

A More Stringent Food and Drugs Bill.—The American Society of Biological Chemists at its recent annual meeting in New York adopted a resolution favoring the passage of "a more stringent food and drugs act, so designed as to afford ultimate protection for the consumer."

Baltimore Wins Health Conservation Contest.—Baltimore won the annual interchamber health conservation contest for cities of more than 500,000 population, sponsored by the U. S. Chamber of Commerce. Chicago won second place. Winners in other population classes were: Rochester, N. Y., 250,000 to 500,000; Hartford, Conn., 100,000 to 250,000; Schenectady, 50,000 to 100,000, and Hackensack, N. J., 20,000 to 50,000.

Joint Hospital Association Meetings.—The hospital associations of Kentucky, Ohio and West Virginia met jointly in Cincinnati, April 17-19. A feature of the program was a public meeting on cancer at which Dr. Irvin Abell, Louisville, spoke on diagnosis and treatment of cancer and Clarence C. Little, Sc.D., managing director of the American Society for the Control of Cancer, New York, on economic aspects and progress in research. —— The hospital associations of Indiana, Illinois and Wisconsin held their annual meetings jointly in Chicago, May 2-4.

Dinner of Diplomates of Special Board.—The American Board of Obstetrics and Gynecology has planned a dinner and round table conference for Wednesday evening, June 13, at the Hotel Cleveland, Cleveland. Diplomates of the board and all physicians interested in the subjects are invited to be present. New diplomates granted certificates at the examination held immediately preceding the annual session of the American Medical Association will be introduced individually. Tickets may be obtained from Dr. Joseph L. Baer, 104 South Michigan Avenue, Chicago.

Association for Research in Ophthalmology.—The Association for Research in Ophthalmology will hold its annual meeting in Cleveland, June 12, at the Hotel Allerton. A tentative program includes the following speakers:

Dr. Benjamin Rones, Baltimore, Genesis of Typical Coloboma.
Dr. Jonas S. Friedenwald, Baltimore, Allergic Theory of Sympathetic Ophthalmia.
Dr. Phillips Thygeson, Iowa City, Etiology of Inclusion Blennorrhea.
Drs. George M. Dorrance and Paul E. Loudenslager, Philadelphia, Physiologic Considerations in Treatment of Pulsating Exophthalmos.
Dr. Ramon Castroviejo, New York, Detachment of the Retina.
Howard B. Adelmann, Ph.D., New York, Embryologic Basis of Cyclopia.
George A. Bishop, Ph.D., and Howard S. Bartley, Ph.D., St. Louis, Functional Study of the Nervous Elements of the Optic Pathway.
Gordon L. Walls, Sc.D., Iowa City, The Reptilian Retina.

Thoracic Surgeons' Meeting.—The American Association for Thoracic Surgery will hold its annual meeting in Boston, May 31-June 2, with headquarters at the Copley-Plaza. Meetings will be at Harvard Medical School and clinics at the Deaconess, Peter Bent Brigham and Massachusetts General hospitals. Among speakers will be:

Mr. Arthur Tudor Edwards, London, England, Intrathoracic Malignant Disease.
Dr. Edward Archibald, Montreal, Dangers of Lobectomy in Relation to the Technic of the Operation.
Dr. Chevalier Lawrence Jackson, Philadelphia, Bronchial Carcinoma: Diagnosis by Bronchoscopic Biopsy in a Series of Fifty Cases.
Dr. Harold Jessen, Davos-Platz, Switzerland, Thoracoplasty in Bilateral Cavernous Tuberculosis.
Drs. Thomas J. Kinsella and Peter M. Mattill, Oak Grove, Minn., Simultaneous Bilateral Artificial Pneumothorax in Treatment of Pulmonary Tuberculosis.

Association for Study of Goiter.—The annual meeting of the American Association for the Study of Goiter will be held in Cleveland, June 7-9, with headquarters at the Wade Park Manor. At the first session a symposium on hyperthy-

roidism will be presented by Drs. Stuart D. Gordon, Toronto; Urban Maes, New Orleans; Howard M. Clute, Boston, and Edward H. Rynearson, Rochester, Minn. Dr. George W. Crile, Cleveland, will give an address at the annual banquet on "Comparative Studies of the Thyroid Gland in Animals." Among other speakers will be:

Dr. Hermann L. Blumgart, Boston, Indications, Contraindications and End Results in Treating Various Forms of Cardiovascular Disease by Complete Removal of the Thyroid.
Dr. Arnold S. Jackson, Madison, Wis., A Survey of Cretinism in the United States.
Dr. William F. Rienhoff Jr., Baltimore, Histologic Structure of the Thyroid in Patients Cured of Hyperthyroidism by Operation.
Dr. Louis J. Karnosh, Cleveland, Psychoses in Hypothyroidism and Hyperthyroidism.

Medical Bills in Congress.—*Changes in Status:* The Senate, May 16, by a vote of 26 to 22, agreed to take up for consideration S. 2800, the Copeland food, drugs and cosmetics bill. H. R. 3768 has been favorably reported to the Senate, proposing to change the name of the retail liquor dealers' stamp tax in the case of retail drug stores or pharmacies to "medicinal spirits stamp tax." *Bills Introduced:* S. 3630, introduced by Senator Wagner, New York, proposes to provide compensation for disability or death resulting from injury to employees in interstate commerce. The bill would apparently authorize an employer to select the physician to treat an injured employee. H. R. 9616, introduced by Representative Woodruff, Michigan, would authorize the withdrawal of alcohol tax free "for the use of any clinic operated for charity and not for profit, including use in the compounding of bona fide medicines for treatment outside of such clinics of patients thereof, but not for sale."

A Million for Infantile Paralysis Fund.—A sum of $1,003,030.08, to be used for the benefit of Georgia Warm Springs Foundation, Warm Springs, Ga., was presented to President Roosevelt, May 9, in a ceremony in the White House. Of the total, $100,000 will be used "to stimulate and further the meritorious work being done in the field of infantile paralysis" outside Warm Springs, "so that the greatest encouragement may be given to others interested in this problem." In addition, $650,000 will be set aside for "the furtherance of the present work done at Georgia Warm Springs Foundation," of which President Roosevelt is the head and founder, while the balance of $253,030.08 will be used "for building, maintenance, and contingencies of the foundation." Executed on parchment, three feet long and eighteen inches wide, the check was presented to President Roosevelt by Rear Admiral Cary T. Grayson. The fund represents the public contributions made at the recent charity balls held in honor of President Roosevelt's fifty-second birthday. The foundation has been in operation since 1927, when it was incorporated not for profit. Only the cost of maintenance and treatment is charged. A patients' aid fund enables the management to admit a few cases at a reduced rate, the amount of reduction depending on the financial circumstances and probability of marked improvement. Preference is given to adults who need treatment in order to increase their ability to become self supporting.

PUERTO RICO

Medical Association Officers.—At the annual meeting of the Medical Association of Puerto Rico in December 1933 Dr. Pablo Morales Otero, San Juan, was elected president and Dr. Julio R. Rolenson, Santurce, secretary. The next session will be held in San Juan in December.

Government Services

Venereal Disease Information

The U. S. Public Health Service wishes to call the attention of physicians to the monthly abstract journal *Venereal Disease Information*, published by the service for the past ten years for the information of physicians, health officers and others. It contains usually one original article and abstracts of current literature pertaining to these diseases. More than 350 medical journals are reviewed for the abstracts. The journal may be ordered from the Superintendent of Documents, Government Printing Office, Washington, D. C., at 50 cents a year. The announcement points out that this nominal charge represents only a part of the expense of preparing the journal, which is a contribution of the public health service in its program directed against the venereal diseases.

Foreign Letters

LONDON

(From Our Regular Correspondent)

April 28, 1934.

The Reform of Medical Education

The reform of medical education has been under discussion for the last few years. Medical teachers, physicians and students agree that the curriculum is overloaded. The British Medical Association appointed a committee on medical education, which has now presented a lengthy report advocating drastic reforms. The primary object of the medical curriculum is described as the production of a practitioner with the right attitude toward professional duties, ability to deal in the early days of practice with such conditions as may confront him, and such basic knowledge and mental training as will enable him to profit by experience. At the same time there should be such a coordinated course of study as will make the student an educated person and not merely a skilled technician. Throughout the curriculum, attention should be directed primarily to health and its preservation, perfection or restoration, and not to disease. The student should start the curriculum with adequate previous equipment. The curriculum should not be regarded as divided into separate blocks of study, but all subjects should be to some extent interdependent. The preliminary sciences in relation to the rest of the medical course, and also anatomy and physiology in relation to clinical study, should be continuous in their application, revision and development. There is no need to prescribe any strict uniformity of method in the application of the curriculum or in the system of teaching adopted. Indeed, it is desirable to encourage a wide liberty of choice in the different schools, provided certain broad requirements are satisfied.

Before registration, the student should be required to show a somewhat higher degree of general education than the minimum now required, and also a sufficient knowledge of physics, chemistry and the general principles of biology. His general education should include the English language and literature, a foreign language and perhaps history. The usual duration of such a course should be two academic years, within which, with average ability, he should get a thorough grounding in physics, chemistry and biology, while continuing his general education. Representatives of the teaching profession consulted by the committee unanimously held that registration of a medical student below the age of 18 years should not be allowed.

ANATOMY AND PHYSIOLOGY

Anatomy and physiology should be taken as interrelated subjects with reference to their subsequent clinical application and should be pursued largely in relation to the living body. During the course the student should become familiar with the methods of manual examination and be taught the use of the clinical thermometer, ophthalmoscope, laryngoscope, rhinoscope, otoscope, estimation of blood pressure, examination of the blood and analysis of secretions. Anatomy should be intimately concerned not merely with structure but with the relation of structure to function and with occasional reference to cases of impaired function as manifested clinically. At present too great demands are made on the student's time in the course on anatomy and physiology. Dissection of every part of the body is unnecessary. Dissections prepared by experts are of great value. Meticulous detail, such as the exact bony attachments of muscles and the relations of the less important arteries, veins and nerves should not be required. Similarly, as regards physiology a good deal of time might be saved by releasing the student from preparing all his own histologic sections and preparing and carrying out many laboratory experiments. On

the other hand, greater attention should be given to genetics, growth and mental function, instruction in which has usually been inadequate. The first is almost a new science since the last revision of the curriculum.

MEDICINE

Of the teaching of medicine in the schools the committee does find grounds for serious criticism. But there appears to be need for more abundant opportunity for the student to have experience with those minor operative procedures regarded within the province of the general practitioner, such as the taking of blood specimens, intravenous medication, lumbar puncture and diagnostic exploration of serous cavities. It would be of great advantage if the student received as a matter of course some of the instruction given to nurses. This might be given by members of the nursing staff. How can the physician supervise the methods of nurses without practical knowledge of these? He should have full opportunities of acquiring skill in special methods of examination, such as of the fundus of the eye, the vocal cords and the ear. He should receive greater instruction in the psychoneuroses. Though these will be always with him in his daily practice as a physician, they now receive less attention than the much rarer psychoses.

SURGERY

Much criticism has been directed to the teaching of surgery. The student should become familiar with the diagnosis and treatment of all the common surgical diseases and injuries and have opportunities of gaining skill in the treatment of fractures and dislocations and the performance of minor operations. An acquaintance with the more common major operations is important, but the mere watching of operations in the theater is largely a waste of time. The treatment of septic conditions in their earliest stage is an essential function of the general practitioner. Therefore every student should have the experience of dealing surgically with such conditions as whitlow, carbuncle and cellulitis. Knowledge so acquired can be applied in many other surgical directions.

APPRENTICESHIP BEFORE INDIVIDUAL PRACTICE

In former times a student was trained by apprentiship to a practitioner. Now the training required for license to practice is entirely hospital. The most revolutionary proposal of the committee is the revival of the apprenticeship after the passing of the final examination. This examination cannot be taken before the close of the fifth year of the curriculum. On passing it a full license to practice independently will not be granted. This can be obtained only after a further period of clinical experience under supervision that would normally extend to nine months and never be less than six. This period might be occupied (1) in a resident appointment in a teaching or other hospital, (2) as a clinical assistant in an approved hospital or clinic, (3) as pupil assistant to an approved general practitioner or (4) in regular attendance at hospital practice in a medical school.

Improved Medical Services for South African Natives

Mr. Hofmeyr, minister of health in South Africa, made an important statement in the house of assembly on the government's intention to improve medical services for the natives. It has long been recognized that medical services in the native territories are pitifully inadequate. In some areas there is only one physician to 30,000 people. It is impossible to supply an adequate number of fully trained native physicians, but the government intends to train several hundred "native aids." These will be given three years of professional training and will work on a system, similar to that in Tanganyika and Uganda, under the supervision of district surgeons. The training will be at a native college financed largely by $375,000 given by the chamber of mines "in recognition of services rendered by the native peoples in the gold mining industry." The government will assist additionally in the training overseas of a selected number of native physicians. It also will appoint a commission to investigate the position of the Cape colored population. These people, who are a mixture of Hottentots, slaves from the East Indies, Bantu and Europeans, are now a more or less well defined racial entity, and investigation of their special problems is long overdue. The government also intends to expand the antituberculosis measures by the institution of clinics and hospitals in all the provinces for colored patients.

PARIS

(From Our Regular Correspondent)

April 4, 1934.

Diseases Transmitted by Blood Transfusion

The Société des médecins des hôpitaux de Paris devoted recently a long session to discussing diseases transmitted by blood tranfusion. Since the creation at Paris of special centers with professional donors, the number of blood transfusions has increased. In connection with the official services of the Assistance publique, a philanthropic society has been founded, which is developing an ever increasing activity. At its recent session it was reported that 220 transfusions were provided in 1929. The number was increased to 3,738 in 1932 and to 5,272 in 1933. At the meeting of the Société des médecins des hôpitaux, special attention was paid to the accidents that occur as a result of transfusions, especially the transmission of syphilis, malaria and infectious diseases. Carnot, Caroli and Maison reported a case of syphilis transmitted by a donor to a typhoid patient affected with profuse and grave intestinal hemorrhages. The first two transfusions had been made with the aid of a professional donor, but the third was an emergency transfusion made with the aid of a hospital patient who appeared healthy and on whom there was no time to do the Wassermann test, which later was found positive. The patient recovered from the typhoid but presented, eighty days later, a typical roseola, which began with a slight eruption at the site of the puncture. Carnot stated that only twenty such cases have been recorded in France and about a dozen in America. They are almost unheard of in well organized transfusion centers. Tertiary syphilis does not appear usually to give rise to accidents after transfusion. A donor affected with eye symptoms and presenting a positive transitory Wassermann reaction was used for eight transfusions without transmitting syphilis. Nevertheless, Spillmann observed a retrograde and syphilitic infection in a physician infected by a patient who presented syphilis of six years' standing. The authors conclude that it is advisable to select donors from among professional donors and to repeat frequently the Wassermann test. Mr. Tzanck reported the case of a donor with a negative Wassermann test who presented later eye lesions that evidenced tertiary syphilis. This donor furnished his blood eighteen times without untoward incidents. In the colonies, in which white persons are commonly affected with grave malarial anemia, the only donors safe to use are Negroes. Unfortunately, most of the Negroes are syphilitic. Tertiary syphilis with a negative serologic test never causes untoward incidents. The case of a physician was recalled who, having served as a donor to a patient who presented a grave hemorrhage after confinement, revealed a roseola in his own person twenty-four days later. This unusual infection was probably due to an error in the technic, which permitted a reflux of blood from the recipient to the donor. Inquiry revealed that the patient showed evidence of syphilis; her husband presented a positive serologic test. Mr. Gougerot cited a case of syphilis transmitted by a donor in whom the Wassermann test was negative but in whom a chancre developed a few days later.

Mr. Gougerot and Mr. Dufour observed a veritable epidemic of syphilis among the clientele of a physician who gave alleged rejuvenating treatments by the injection of blood serum of young persons and who was content, in order to avoid the necessity of the Wassermann test, to add mercuric cyanide to the blood serum thus injected. The mercuric cyanide had no effect on the spirochetes. To the suggestion of Mr. Milian, who proposed the use of animal blood to avoid all these risks, Tzanck replied that such use is dangerous and that fatalities may result if doses slightly in excess of normal are employed. Numerous speakers cited cases of transmission of malaria through blood transfusion. With respect to malaria, Mr. Pinard pointed out that one may observe an ordinary infection if it is a question of a first attack or of manifestations of super-infection, with abortive reactions, in persons who have previously presented malarial attacks. The addition of mercuric cyanide to malarial blood does not prevent malarial attacks from developing. Mr. Harvier reported the case of a malarial attack following transfusion for hematemesis. The donor, in apparently good health, had never had a malarial attack (he had been taking quinine as a preventive measure), but he had resided in the colonies. Examination of a thick smear revealed the presence of parasites.

The author recalled that many persons who have resided in the colonies have late attacks of malaria; hence a malarial person who has not had an attack for eighteen months would not be regarded as cured. Such flareups are well known, for even though the hematozoon may have disappeared from the peripheral blood it may persist in the deep-lying organs for years, the malaria reappearing in connection with a traumatism, a chill, and the like. He therefore recommended the rejection of all prospective donors who have resided in the colonies, even though the Henry reaction is found to be negative. P. E. Weil confirmed the existence of latent malaria in association with splenomegaly. Tzanck and Juliet reported four cases of septicemia as transmitted from the recipient to the donor by reflux of blood, which always evidences some grave technical error, even though citrated blood is employed.

Mr. Laubry exhibited an apparatus devised by Henry and Jouvelet, which is designed to prevent such accidents.

Lyons Invaded by Mosquitoes

Lyons, situated at the confluence of the Rhône and the Saône, has many rainy days, and mosquitoes constitute a plague in that region. Fortunately, the mosquitoes are not Anopheles and are not hosts of malaria, at least at present. But their continual attacks, during a large part of the year, make life almost unbearable. The magnificent Hôpital de Grange Blanche (just recently completed with the aid of funds furnished by the Rockefeller Foundation), which represents the highest development in hospital construction, is so infested by mosquitoes that the patients constantly complain. The city of Lyons includes in its annual budget 20,000 francs ($1,200) to carry on an everlasting crusade against the mosquitoes. Dr. Nové-Josserand and Mr. Sahuc presented recently to the municipal council the results of their studies on this subject. They concluded that these mosquitoes (Culex pipiens) are not brought in by the winds but are hatched in the buildings of the city, in the eaves under the roofs, and especially in the cesspools, to which protruding tile pipes establish communication with the outer air and through which the female mosquito descends to deposit its eggs on the excrementa. They belong, therefore, to the category that Dr. Legendre has termed "Stercoraires." The only remedy, according to Nové-Josserand, would be to pour a light oil into the toilets. Dr. Garin, on the contrary, regards such a measure as merely palliative. In his opinion the mosquitoes will not be eliminated from Lyons until a complete sewer system has been installed in the city.

BERLIN

(From Our Regular Correspondent)

April 9, 1934.

Divorces in the German Reich, 1919-1932

According to statistics compiled by the Reichsgesundheitsamt, there were more than 16,000 divorces in 1913 among the 11 million married persons, or 15.2 per 10,000. In the fourteen postwar years 1919-1932 the percentage of divorces just about doubled. In the years 1920-1922, in which a large portion of the war marriages were dissolved, the figure rose to 30 per 10,000. During the period 1923-1932 the percentage of divorces did not recede to the prewar condition but ranged around 86 per cent higher, or 28.2 per 10,000. In 1932, the last year for which statistics are available, 42,000 of the 14 million married persons were divorced by court action, or 29.7 per 10,000. The slight fluctuations in most of these years leads to the conclusion that the frequency of divorce is not controlled so much by changing economic conditions, and that the fairly uniform postwar figures may be regarded as an expression of a decline of family unity and solidarity. Before the war, the alleged grounds for divorce in 48 per cent of the trials were adultery, bigamy and various forms of unchasity, 40.8 per cent of violations of conjugal duties and dishonorable behavior, and 9 per cent of wilful desertion. Only 2.2 per cent of the cases were based on mental illness and the like. The first postwar years (1919-1921) brought considerable increase in the number of divorces due to adultery, bigamy and the like, the proportion reaching 64.3 per cent, whereas divorces due to violations of conjugal duties or dishonorable behavior declined to 31.6 per cent; the divorces due to wilful desertion dropped to 2.9 per cent. During the following years the importance of adultery as a ground for divorce declined, and violations of conjugal duties, together with dishonorable behavior, increased, the figure reaching 63.2 per cent in 1932, whereas adultery was the charge in only 33.4 per cent of the cases.

The greatest divorce frequency was for marriages contracted from three to six years previously (30.5 per cent of all divorces). A comparatively large number of divorces concerned marriages of long duration. It was estimated that nearly one fifth of all legal decisions had to do with marriages that had continued fifteen years or more.

Observations on the Results of Castration

In connection with recent German legislation, Professor Lange, psychiatrist, of Breslau, reports on experiences to date with castration. Reports of observations on castration and its results are fairly numerous, although not systematically arranged as yet. The best known are those on church choir singers among certain religious sects. In recent years, Denmark and some cantons of Switzerland have adopted legislation similar to that of Germany. The reason why the results in those countries have been particularly good is that operations have been performed only at the request of the person intimately concerned, the request itself furnishing evidence of a desire to reform.

Lange's observations are based mainly on a study of the official reports on soldiers wounded and operated on during the war. A follow up of these patients supplies a more objective basis than the subjective accounts, which are often veiled or exaggerated. The results of later examinations are recorded in the army reports. In most cases, in addition to the final examination previous to discharge from the service, there was a second examination in 1919 and a further control examination during the period 1920-1922. Among 330 patients, the later life experiences of 250 were recorded. The age of the patient at the time of castration was below 25 in more than 100 instances. Some patients had undergone complete castration;

some had been affected with bilateral tuberculosis of the testes, and still others presented small testicular remnants. Potency was seldom destroyed, and in some instances there seems to have been even an abnormal sexual desire, often with a discrepancy between potency and libido, or even inversion of the sex impulse. Of the patients undergoing complete castration, ninety married. During the first years after marriage there was no reduction of energy, working capacity or the like; in some instances even an increase in artistic trends was observed. There was no increase in the incidence of suicide, and no evidence of early mortality. In some patients vasomotor disturbances developed, while in others neurasthenia and depression states appeared. As time went on there were changes in body form and hair growth, height and weight, evidences of physical and psychic effeminacy, and less frequently premature senility along with climacteric disturbances. These appeared usually soon after age 40.

All such emotional fluctuations would doubtless be more marked in persons with mental disease. An individual prognosis is impossible. Lange suggested the creation of a center for the systematic elaboration of the results to be secured. The observations to date may be regarded as a support for the recent legislation. The fact must never be forgotten, however, that castration is a serious intervention that is often associated with grave damage to both body and mind.

Photography of Beginning Cataract

With the cooperation of the Firma Zeiss, the director of the ophthalmologic department of the Allerheiligen-Hospital in Breslau has constructed an apparatus with which changes that occur in the crystalline lens during the development of cataract can be recorded by means of photographs. The slit lamp method is not adapted to this purpose, but the speculum termed the lupenspiegel furnishes pictures giving a good general survey of the field. The photographic method is complicated. Beginning with a mild light, one must suddenly go over to the strongest light in making the photograph. The photograph is taken with a camera which has an arrangement that enables the operator to change the intensity of the illumination and to insert the photographic plate at the same moment. The camera can be set to photograph the same sites again in precisely the same manner, which makes possible a continuous control by means of projections made several weeks or months apart. At first only the sites with the most marked changes are photographed; three projections are sufficient to bring out plainly the relations of the deeper tissues. The changes that the eye undergoes are of an exceedingly manifold type.

Changes in Hemoglobin in Relation to Porphyrinuria

Research on the porphyrins has been carried out chiefly by H. Fischer of Munich and his collaborators. The importance of the porphyrins extends far beyond the known disease groups. On the basis of recent research, particularly that of Schreus, the Düsseldorf professor of dermatology, and that of his collaborator Carrié, there is a close connection between changes in the hemoglobin and porphyrin excretion. For the body, porphyrins in quantities that only slightly exceed the physiologic norm exert an important influence, although their actions have not as yet been carefully studied. The symptoms affecting the intestinal tract, the kidney (oliguria), the nerves and the blood vessels in lead porphyrinuria, and in other diseases associated with disintegration of the blood, are in all probability due to the effects of porphyrin and hence can be grouped together as porphyrinopathies. Research on these syndromes is the task of the clinic. Furthermore, important disclosures concerning the closer connection between blood disintegration and porphyrin excretion are anticipated. It has been found that even small doses of arsenic produce blood disintegration and porphyrin excretion, from which fact it may be concluded that the therapeutic effect of the administration of arsenic is due to the blood disintegration it causes.

ITALY

(From Our Regular Correspondent)

March 15, 1934.

Vaccine Treatment of Undulant Fever

At a recent session of the Società medico-chirurgica of Catania, vaccinotherapy by the intravenous route in undulant fever was discussed by Di Guglielmo, who based his statements on an experience with more than 130 cases, with 100 per cent of recoveries. The treatment was harmless at all ages (from 4 to 77) and in all conditions, even the most grave, not excepting renal involvement. The majority of cases require about a month's treatment, with massive doses of vaccine containing 75 million germs. There is a possibility of short courses of treatment (two injections, or sometimes a single injection, with from 5 to 10 million germs) and also the possibility of prolonged treatment (a month and a half, with from twelve to fourteen injections; massive doses up to 125 million germs). Fichera obtained good results in the nine cases in which he tried the method. Grasso also had treated ambulatorially twenty cases by this method, obtaining sixteen recoveries and four notable improvements, still under treatment.

Signorelli considered the various types of reaction observed. In persons not affected with undulant fever, fever is not ordinarily produced as the result of intravenous injections of small doses of vaccine. But in some cases the reaction does occur, and hence an absolute diagnostic value cannot be given to this test in doubtful cases of undulant fever. Furthermore, with small doses of vaccine a frank febrile reaction may not occur even in true undulant fever patients.

Cordaro studied in twenty-eight cases the sedimentation speed of the red corpuscles. The febrile reaction that follows vaccinotherapy is accompanied by a considerable increase of the sedimentation speed, which, however, after the reaction has ceased, returns to the original values. When defervescence has been brought about, the sedimentation speed decreases slowly and reaches almost normal values in about ten days.

Sorge called attention to the practical value of Burnet's skin reaction for the diagnosis of undulant fever.

Early Aid for Tuberculous Patients

At the suggestion of the Sanità pubblica, the commission appointed to study the diagnosis and early aid of tuberculous patients held a meeting presided over by Professor Micheli. The commission pointed out that it is desirable to extend gradually compulsory insurance against tuberculosis, applying it more generally to persons employed to render personal service, carriers and persons engaged in the handling of food products. Every effort must be made to bring it about that persons with tuberculosis shall be treated early. To that end the provincial antituberculosis societies should be financed more generously and should be organized in such a manner as to be able to function as general consultation centers and attract thus a greater number of suspected patients.

Method of Exploring the Functioning of the Liver

Before the Accademia delle scienze medico chirurgiche of Naples, Dr. Zappacosta recently described a method for the determination of glycocyamine in the blood. He injected glycocyamine by the intravenous route in the amount of 3 or 4 mg. per kilogram of body weight, and a quarter of an hour after the injection he no longer found it in the blood of forty-five normal individuals. On the other hand, in forty-six patients with various disturbances of the liver he observed that the

glycocyamine is still present in the blood after the same period of time and even in a conspicuous quantity—in the majority of the cases proportionately to the decreased functional capacity of the liver. In these liver patients the author employed as controls also other means of exploration, including provoked bilirubinemia and the amino-acidemia curve. Dr. Zappacosta concludes that the test is highly sensitive.

The Death of Professor Angelucci

Dr. Arnaldo Angelucci, professor emeritus of clinical ophthalmology at the University of Naples, died recently. He had a brilliant career. At the age of 31 he became director of the Clinica di Cagliari, from which he passed to that of the universities of Messina and Palermo and finally to the University of Naples, where he was for twenty-five years.

His most notable studies are those on the function of the retina, in which he explained the complex changes that take place in the retina through the effects of light. He found that such changes are observed also in the parts of the central nervous system that have direct relation with vision, whereupon he formed a new theory of vision. He studied also the physiopathology of the cervical sympathicus in its relations to the eye; the loss of secretion of the aqueous humor, and the nutrition of the eye. Owing to these studies, he was entrusted with writing the chapter on the physiology of the eye in the Enciclopedia francese di oftalmologia.

He interpreted glaucoma as due to a vascular change. This conception he confirmed later—also with reference to infantile glaucoma. Professor Angelucci was the first to discover in patients with spring conjunctivitis a syndrome characterized by an excitable temperament, palpitation and vasomotor disturbances, which he termed the Angelucci syndrome and which today is interpreted as an expression of neuro-endocrine disturbances associated with the still unknown cause of the disease.

Angelucci devised operative procedures for the treatment of senile ectropion of the lower eyelid and of paralytic ptosis of the upper eyelid. He was a pioneer in studies on constitution in ophthalmology. To trachoma, Angelucci had devoted himself in recent years. With regard to treatment, he emphasized the advantages of autoserotherapy and, for prophylaxis, the need of improving the general condition of children with adenoids.

He established in his Clinica di Napoli a combination school and sanatorium for trachomatous children of the elementary classes, and a combination institute and preventorium for the treatment of constitutional diseases in school children. He founded in 1893 the *Archivio d'oftalmologia*, a journal that is still flourishing.

Council on Research

The Consiglio nazionale delle ricerche met in Rome, March 8. The head of the government was present. Senator Marconi, president of the council, gave an account of its activities during the year. Research was conducted on a possible submicroscopic type of malarial parasite. The first results showed that there are differences between the action of strains artificially transmitted from man to man for therapeutic purposes and the genuine parasitic strains. Questions pertaining to alimentation continue to be the subject of intensive studies. Twelve university laboratories have about completed their research on the nutritional value of food products of Italian origin. An inquiry into the alimentation of the various classes of the Italian people is being conducted, and a study is being made on the population of the swamps recently drained. With the latter research is associated an investigation on the somatic and demographic characters of the families that have settled here, in order to ascertain their adaptation to the new surroundings. Research is also being carried on to discover the causes for the depopulation of the mountain regions.

JAPAN

(From Our Regular Correspondent)

March 31, 1934.

Official Japanese Physicians in Manchuria

A number of Japanese physicians have been appointed official practitioners in the new empire of Manchokuo. They established in the remote parts of the country, where no properly qualified doctors practiced. Here only the old Chinese medicine was represented and a kind of medicine men practice in the most primitive manner. Now the official physicians have been placed in every prefecture. Their duties are to prevent epidemics, to do research on local diseases, to vaccinate, to take charge of school hygiene, to hold inquests and necropsies, to give free medical treatment to the poor, and to gather medical statistics. In time of emergency they must be at the scene to render medical aid on the spot. For those duties and work they are paid reasonably well and are furnished with offices, general medical equipments and dwelling houses. They can, of course, do private practice also but they and their families cannot set themselves up in the drug or chemical business.

Industrial Guild Hospitals

According to the annual report of the central industrial guild, sixteen hospitals belong to the guild; there are sixty-five consulting offices, each of which is attached to one sickness union. As for the maintenance of the hospitals and offices, nearly half of them are said to face economic difficulty. A union that has 2,000 members or so in the same district is successful, but the union with 400 or 500 members is a failure, because it is in remote villages or small towns, where the patients can hardly pay in cash owing to the depression. When the patient leaves a medical fee unpaid, he prefers to go to another practitioner who is rich enough to wait until the end of the year to be paid. The union established by the lower classes cannot do this.

The International Culture Association

The Kogakukai, under the charge of Dr. Choei Ishibashi, has recently changed its name to the International Culture Association, which aims to promote international understanding through learning foreign languages, especially through medical science. The society has long been making great efforts to introduce German among physicians as a convenience for them in studying medical science. They intend to extend the work to French and English. The association endeavors to assist physicians with foreign languages by translations and by introducing foreign medical science in this country, and vice versa.

The Question of Reporting All Tuberculous Cases

In the revision of the regulations for the prevention of tuberculosis, there are these important facts: The government insists on the need of reporting every case of tuberculosis to the police, without which, it is asserted, no prevention can be expected. On the contrary, the antagonists, chiefly found among practitioners, indicate that compulsory notification will seriously affect a patient's social relations, such as unemployment and marriage. Who will be honest and courageous enough to consult a physician at the peril of those disadvantages in social affairs? He would rather be a good customer of the druggist than of the practitioner. This would tend not only to spread the disease more and more but tempt physicians to conceal the cases of tuberculosis from government officials. Under present conditions they could not accommodate all the tuberculous patients if reported, owing to the great shortage of hospital beds for such cases. Moreover, it should not be forgotten that physicians will be hard hit by this system. The establishment of dispensaries was debated at length in a meeting of the national health investigation committee last winter, and it was

concluded that one dispensary ought to be established for each hundred deaths from tuberculosis; there is one dispensary to each 100,000 of population at present. As to the function of the dispensary, there is a controversy: physicians want the dispensary to be only a consultation office which would not undertake treatment; the government's idea is that the dispensary should give not only advice but medical treatment, if necessary. With debates to everybody's satisfaction, the policy is expected to be agreed on before long.

The Loss Charged to Tuberculosis

Dr. E. Kanasugi, veteran physician, and member of the house of peers, made a speech in the present session on fixing the national policy of stamping out tuberculosis in Japan. He presented as the basis of his argument the following facts: The deaths in 1931 from this disease numbered 121,874; that is, 18.64 for 10,000 of population; 76,750 of the deceased were between 15 and 34 years old. Moreover, this number may be far smaller than the true number. The economic loss may be roughly estimated at over 400,000,000 yen, if each case is allowed one yen a day for medical treatment. The loss of the families may be estimated at millions of yen, besides the loss to industry, education, and the army. The comparison of these deaths with the hospital beds in 1931 shows only 7.5 beds for tuberculosis per hundred deaths, while England has 64.7 beds, America 112.28 beds, and Germany 115.5 beds. In England there is one dispensary for every 50,000 of population, in America one for 28,000 and in Germany one for 47,000, while in Japan there are only a few dispensaries in the greater cities, as if they were established only as samples. The sum of 3,500,000 yen, including the national and local governmental expenditure and that of various nonofficial societies, is paid every year for preventive work; that is, only 5.3 sen (or about 2 cents) a man, while England spends 2 shillings a man and Germany 2 marks.

In the diet, the prime minister declared that the government would lose no time in adopting a better national policy against tuberculosis. The only question is how to raise the large sum necessary. Plans are said to be under consideration by the authorities, such as an increase of the tax on some luxuries.

Another Study on Menstruation

The *Women's Review*, or *Fujin Koron*, a monthly magazine for women, after six months of hard work under the guidance of prominent physicians has issued a pamphlet, called "menstruation reports," which is based on replies from over 6,000 women. The reports were given voluntarily and have come from almost every class and district of the country, including both the married and the unmarried. According to this report the first menstruation of these Japanese women occurred at the average age of 14 years and 3 months. Out of 4,884 women, 1,435 had the first flow in winter, 1,315 in summer, 1,184 in spring and 950 in autumn. The average menstrual cycle is thirty-one days, but the normal lies anywhere between twenty-seven and thirty-four days. Among 1,612 women the period lasted five days; 1,160 women, four days; 1,071 women, six days; 481 women, seven days, and 363 women, three days. Among 3,074 women, 2,559, or 83.25 per cent, did not feel pain at menstruation, while 515, or 16.75 per cent, did feel pain.

A Daily Medical Paper

Dr. S. Tsuchiya, a member of parliament who is proprietor of the *Japan Medical World*, a weekly journal, has announced that he and his colleagues would publish a daily medical paper. This is the first attempt in this country to have a daily medical paper, and 50,000 physicians throughout the country are glad, it is reported, to have a powerful protector of their own kind in such troubled times. The new medical paper is going to fight for the doctors.

Marriages

WILLIAM JENNINGS SWEELEY, Vermilion, S. D., to Miss Edith Keeling Maggart of Winnetka, Ill., May 5.

EUCLID MONROE SMITH, Hot Springs National Park, Ark., to Miss Madge Eloise Wootton, February 20.

JOHN WHITTIER LEECH, West View, Pa., to Miss Katherine Enid Evans of Pittsburgh, May 12.

HOWARD CHANDLER SMITH to Miss Mary Burnam, both of Baltimore, April 26.

LEONE M. SCRUBY, Des Moines, Iowa, to Mr. Oscar Lofquist, February 15.

Deaths

Clement Cleveland, New York; College of Physicians and Surgeons in the City of New York, Medical Department of Columbia College, 1871; fellow of the American College of Surgeons; past president of the American Gynecological Association and the New York Obstetrical Society; at one time vice president of the American Society for the Control of Cancer; surgical director emeritus to the Woman's Hospital; for many years on the staff of the Memorial Hospital and formerly on the staff of the City Hospital; aged 90; died, April 16, in Palm Beach, Fla.

Bern Budd Gallaudet, New York; College of Physicians and Surgeons in the City of New York, medical department of Columbia College, 1884; member of the Medical Society of the State of New York and the American Association of Anatomists; associate professor of anatomy at his alma mater; consulting surgeon to the Bellevue Hospital; aged 74; died, March 30, of intestinal obstruction due to chronic diverticulitis.

Melvin J. Locke, Bellefonte, Pa.; Hahnemann Medical College and Hospital of Philadelphia, 1891; member of the Medical Society of the State of Pennsylvania; formerly secretary of the Center County Medical Society; fellow of the American College of Surgeons; on the staff of the Center County Hospital; president of the school board; aged 66; died, April 14, of septic meningitis.

William Walter Beattie, Montreal, Que., Canada; McGill University Faculty of Medicine, 1920; lecturer in bacteriology at his alma mater; member of the Society of American Bacteriologists; formerly assistant on the staff of the Rockefeller Institute for Medical Research; aged 39; was instantly killed in an automobile accident, April 13, near Biggleswade, Bedfordshire, England.

Jocelyn Joseph Emmens ● Medford, Ore.; Medico-Chirurgical College of Philadelphia, 1905; member of the Pacific Coast Oto-Ophthalmological Society; on the staffs of the Community Hospital and the Sacred Heart Hospital; aged 53; died, April 13, in the Scripps Memorial Hospital, La Jolla, Calif., of cerebral hemorrhage.

Edwin Fred Gissler Jr., Brooklyn; Eclectic Medical College of the City of New York, 1897; member of the Medical Society of the State of New York; aged 58; on the medical board of the Evangelical Deaconess Hospital, where he died, April 24, of atrophic cirrhosis of the liver, and arteriosclerotic heart disease.

Francis Marion Thigpen ● Montgomery, Ala.; Tulane University of Louisiana Medical Department, New Orleans, 1891; member of the American Laryngological, Rhinological and Otological Society; on the staff of St. Margaret's Hospital; aged 66; died, April 22, of influenza and cardiorenal complications.

Albert S. Rudy, Lima, Ohio; Medical College of Ohio, Cincinnati, 1884; member of the Ohio State Medical Association; at one time city health officer and member of the board of education; formerly on the staffs of the Lima City and St. Rita's hospitals; aged 78; died, April 6, of carcinoma of the liver.

Charles Oren Burke, Atlanta, Ill.; Jefferson Medical College of Philadelphia, 1887; member of the Illinois State Medical Society; served during the World War; formerly on the staff of St. Joseph's Hospital, Bloomington; aged 69; died, May 3, of chronic myocarditis, hypertension and arteriosclerosis.

John William Gunn, Boise, Idaho; Cooper Medical College, San Francisco, 1884; past president of the Medical Association of Montana; past president and secretary of the Silver

Bow (Mont.) County Medical Society; formerly health officer of Butte; aged 78; died, April 8, in San Francisco.

Allen Joseph Ingersoll, Mentor, Ohio; Western Reserve University Medical Department, Cleveland, 1893; member of the Ohio State Medical Association; for thirty-three years a member of the school board; aged 72; died, April 11, of injuries received when he was struck by an automobile.

Ross Grosshart, Tulsa, Okla.; Kansas City (Mo.) Medical College, 1899; member of the Oklahoma State Medical Association; past president of the Tulsa County Medical Society; on the staffs of the Morningside and St. John's hospitals; aged 56; died, April 15, of coronary occlusion.

John Dougherty Joseph Curran, Atlantic City, N. J.; Georgetown University School of Medicine, Washington, D. C., 1903; served during the World War; formerly instructor in pediatrics, Jefferson Medical College of Philadelphia; aged 56; died, April 18, of cardiorenal disease.

Clarence John Burns ● Columbus, Ohio; Ohio State University College of Medicine, Columbus, 1919; on the staff of the Mount Carmel Hospital; aged 38; died, March 17, in Tucson, Ariz., of lung abscess, bronchiectasis and cardiac decompensation.

Adelbert Morton Austin ● Quincy, Ill.; Washington University School of Medicine, St. Louis, 1904; past president of the Adams County Medical Society; on the staff of the Blessing Hospital; aged 53; died, March 20, at his home in Mendon, of heart block.

Daniel Webster O'Connell, New Britain, Conn.; College of Physicians and Surgeons, Baltimore, 1905; member of the Connecticut State Medical Society; on the staff of the New Britain General Hospital; aged 53; died, March 18, of coronary occlusion.

John Richard Taylor, Madison, Wis.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1899; served during the World War; aged 72; died suddenly, April 5, in London, England, of heart disease.

Max Reynolds Gabrio ● Philadelphia; Jefferson Medical College of Philadelphia, 1913; instructor in ophthalmology, University of Pennsylvania School of Medicine; on the staff of the Wills Hospital; aged 49; died, April 26, of heart disease.

Robert Cecil Potter, Newark, N. J.; University of the City of New York Medical Department, 1893; member of the Medical Society of New Jersey; for many years on the staff of St. Michael's Hospital; aged 63; died, February 6.

Bronislaw Jozef Nowierski, Yorktown, Texas; University of Missouri School of Medicine, Columbia, 1884; past president and secretary of the De Witt County Medical Society; aged 70; died, February 19, of chronic myocarditis.

Julius Goldfinger, Cleveland; Cleveland College of Physicians and Surgeons, Medical Department of the University of Wooster, 1895; on the staff of the Fairview Park Hospital; aged 62; died, March 20, of heart disease.

Leslie Grant Hill, Estherville, Iowa; Hahnemann Medical College and Hospital, Chicago, 1895; member of the Iowa State Medical Society; fellow of the American College of Surgeons; aged 65; died, February 24.

Carl O. Larson, Superior, Wyo.; Jefferson Medical College of Philadelphia, 1918; member of the Wyoming State Medical Society; aged 44; died, March 19, in Rochester, Minn., of tuberculosis of the kidney.

Stanley J. Beckett, Chicago; Chicago Medical School, 1928; aged 33; died, May 9, in the Danish-American Hospital, of injuries received when the automobile in which he was driving was struck by a street car.

William Penn Reese, Taylors Store, Va.; University of Pennsylvania School of Medicine, Philadelphia, 1872; member of the Medical Society of Virginia; aged 86; died, February 15, of acute dilatation of the heart.

Alexander H. Pearson, Hamburg, Mich.; University of Michigan Medical School, Ann Arbor, 1904; served during the World War; aged 55; died, March 13, of acute nephritis, hypertension and arteriosclerosis.

Robert Francis McLeod, Titusville, Fla.; Bennett Medical College, Chicago, 1915; member of the Florida Medical Association; served during the World War; aged 40; died, March 27, of acute dilatation of the heart.

William Norrie Robertson, Toronto, Ont., Canada; Victoria University Medical Department, Coburg, 1884; L.R.C.P., Edinburgh, L.R.C.S., Edinburgh, and L.F.P.S., Glasgow, 1885; aged 79; died, February 19.

Delvous Houseworth ● Douglasville, Ga.; University of Georgia Medical Department, Augusta, 1895; secretary of the Douglas County Medical Society; aged 63; died, April 17, of carcinoma of the pancreas.

Joseph Emanuel Larson ● Chicago; Northwestern University Medical School, Chicago, 1909; aged 55; on the staff of the Roseland Community Hospital, where he died, April 24, of gastric ulcer.

Obe Haight Hoag, San Francisco; College of Physicians and Surgeons of San Francisco, 1911; served during the World War; aged 63; died, March 3, in the Veterans' Administration Facility, Palo Alto.

Robert O. Huffaker, Greeneville, Tenn.; University of Louisville (Ky.) School of Medicine, 1892; aged 68; died, April 19, in the Greeneville Hospital, of uremia, nephritis and myocarditis.

Russell Davenport Walton, Frankfort, Maine; College of Physicians and Surgeons, Baltimore, 1902; served during the World War; aged 57; died, April 1, of cerebral embolus and mitral stenosis.

Cheney Isaac Cole, Goffstown, N. H.; Baltimore Medical College, 1896; member of the New Hampshire Medical Society; aged 68; died, February 26, of hypertension and chronic nephritis.

John Fleming Goodchild, Toronto, Ont., Canada; Queen's University Faculty of Medicine, Kingston, 1899; L.R.C.P., London, and M.R.C.S., London, 1904; died, April 27, of influenza.

Franklin Cauthorn, Portland, Ore.; University of Missouri School of Medicine, Columbia, 1878; Jefferson Medical College of Philadelphia, 1879; aged 75; died, February 13, in Harmon, N. Y.

John Nicholas Atheneos, New York; Columbia University College of Physicians and Surgeons, New York, 1933; aged 29; died, May 7, in the Morrisania Hospital, of pneumonia.

George E. Countryman ● Aberdeen, S. D.; Missouri Medical College, St. Louis, 1888; on the staff of St. Luke's Hospital; aged 69; died, April 24, of cerebral hemorrhage.

Lewis Charles Robinhold ● Auburn, Pa.; Jefferson Medical College of Philadelphia, 1891; aged 64; died, March 9, of cardiovascular renal disease and bronchopneumonia.

William Von Boenigk, Chicago; National Medical University, Chicago, 1909; on the staff of the Martha Washington Hospital; aged 60; died, May 9, of coronary thrombosis.

Alfred S. Weiss ● Lebanon, Pa.; Medico-Chirurgical College of Philadelphia, 1903; on the staff of the Good Samaritan Hospital; aged 54; died, April 2, of coronary thrombosis.

John George Crosby, New York; University of Arkansas School of Medicine, Little Rock, 1924; aged 41; died, February 1, in the Bellevue Hospital, of cerebral embolus.

John W. Kinsinger, Vaughn, N. M.; Cincinnati College of Medicine and Surgery, 1887; past president of the New Mexico Medical Society; aged 70; died, February 18.

Walter W. Holladay ● Porterville, Miss. (licensed in Mississippi in 1883); president of the Kemper County Medical Society; aged 77; died, January 12, of myocarditis.

Valentine J. Yorty, Pittsburgh; Baltimore Medical College, 1906; member of the Medical Society of the State of Pennsylvania; aged 56; died, April 17, of fibrosarcoma.

Charles Henri Ferguson, Toledo, Ohio; Toledo Medical College, 1896; aged 70; died, April 25, in St. Vincent's Hospital, of cirrhosis of the liver and diabetes mellitus.

Fordyce G. Gabbert, Casey Creek, Ky.; University of Louisville School of Medicine, Philadelphia, 1909; aged 51; died, March 16, of pneumonia and heart disease.

Birdie Eugenia McLain Springs Higginbotham, Chicago; Bennett Medical College, Chicago, 1912; aged 43; died, January 6, of toxemia, due to extensive burns.

William Pardee Sprague, Los Angeles; Bellevue Hospital Medical College, New York, 1882; aged 73; died, March 19, of coronary thrombosis and arteriosclerosis.

Marks Murray Waxman, New York; University and Bellevue Hospital Medical College, 1903; aged 50; died, April 9, of heart disease, aboard the *Mauretania*.

William Cooke Lester, Batesville, Miss.; University of Louisville (Ky.) School of Medicine, 1911; served during the World War; aged 48; died, February 11.

William Albert Holden, Pasadena, Calif.; American Medical College, St. Louis, 1899; aged 74; died, April 1, in the Los Angeles General Hospital, of uremia.

Alexander Reid, Umatilla, Ore.; University of Oregon Medical School, Portland, 1896; aged 73; died, March 8, in Los Angeles, of carcinoma of the throat.

William Wirt Jones, Dayton, N. Y.; University of Buffalo School of Medicine, 1892; for many years health officer; aged 66; died, April 14, of myocarditis.

Garrett Joseph Hickey, Northampton, Mass.; University of Maryland School of Medicine, Baltimore, 1893; aged 67; died, April 9, of cerebral hemorrhage.

Frederick William Arlt, New Haven, Conn.; University and Bellevue Hospital Medical College, New York, 1906; aged 57; died, March 8, of heart disease.

Paul Truitt Willis, Brooklyn; Cornell University Medical College, New York, 1921; aged 37; died, March 27, of myocarditis and bronchopneumonia.

Lucius Field Foote, Minneapolis; Chicago Medical College, 1877; aged 81; died, April 10, in the Hill Crest Surgical Hospital, of arteriosclerosis.

Emil Joel ● New York; Bellevue Hospital Medical College, New York, 1894; aged 68; died, April 22, of pneumonia and cerebral hemorrhage.

Le Roy Newlin, Robinson, Ill.; Kentucky School of Medicine, Louisville, 1891; aged 74; died, February 18, of chronic myocarditis and hepatitis.

Giovanni Alphonso Barricelli, Cleveland; University of Illinois College of Medicine, Chicago, 1903; aged 61; died, April 16, of heart disease.

Charles Smoot Holton, Richmond, Ky.; Hahnemann Medical College and Hospital, Chicago, 1885; aged 73; died, April 3, of heart disease.

William Andrew Montgomery, Atkins, Ark.; Memphis (Tenn.) Hospital Medical College, 1889; aged 77; died, March 5, of angina pectoris.

Benton V. Canfield, Indianapolis; Central College of Physicians and Surgeons, Indianapolis, 1890; aged 69; died, April 27, of heart disease.

Harold Hartley Greene ● Jefferson City, Mo.; Harvard University Medical School, Boston, 1929; aged 30; died, April 9, of mastoiditis.

George Espy Doty, New York; University of the City of New York Medical Department, 1891; aged 65; died, April 25, of pneumonia.

George W. Wood, Bristol, Colo.; University of Louisville (Ky.) School of Medicine, 1894; aged 74; died, March 30, of hypertension.

Walter Benjamin Kirk, Darlington, Md.; University of Maryland School of Medicine, Baltimore, 1893; aged 65; died, February 21.

Louis William Dimsdale, Los Angeles; Bennett Medical College, Chicago, 1911; aged 50; died, March 6, of carcinoma of the lung.

Milton D. Striplin, Funston, Ga.; Georgia College of Eclectic Medicine and Surgery, Atlanta, 1891; aged 65; died, February 9.

Benjamin Levan Saeger, Ojai, Calif.; University of Michigan Medical School, Ann Arbor, 1878; aged 81; died, February 14.

Jane Mason Bowen, San Jose, Calif.; Hahnemann Hospital College of San Francisco, 1891; aged 90; died, February 19.

Harry Hollister Boynton ● Lisbon, N. H.; Baltimore Medical College, 1893; aged 64; died, April 23, of angina pectoris.

Edwin A. Taylor, Chicago; Hering Medical College, Chicago, 1895; aged 70; died, March 25, of a self-inflicted gunshot wound.

Jesse K. Hayes, Hanson, Ky.; University of Louisville School of Medicine, 1880; aged 83; died, March 9, of senility.

Clement Milton Beck, Beverly Hills, Calif.; National Medical University, Chicago, 1909; aged 68; died, February 25.

Archibald Wilson, Toronto, Ont., Canada; University of Toronto Faculty of Medicine, 1878; aged 82; died, February 7.

Thomas James Jamieson, Ottawa, Ont., Canada; Trinity Medical College, Toronto, 1888; aged 72; died, February 6.

David W. Baggs, Ludowici, Ga.; Atlanta Medical College, 1894; aged 63; died, April 7, in a hospital at Jesup.

Mark H. Sears, Denver; Chicago Medical College, 1883; aged 75; died, March 5, in the Mercy Hospital.

Correspondence

LONGEVITY OF THE ERYTHROCYTE

To the Editor:—In a recent editorial on the longevity of the erythrocyte (THE JOURNAL, April 21, p. 1304) are quoted the results of studies made by Escobar and Baldwin, who found the life of the red blood cell to be from eighteen to thirty days. The method used by Escobar and Baldwin and also the other methods mentioned in the editorial are indirect and therefore may yield inconclusive results. There is a simple method for determining the life of an erythrocyte by means of which accurate results can be obtained but which is not mentioned in the editorial; namely, by tracing the fate of transfused blood cells.

In the editorial, the following statement was made: "Unfortunately, one cannot earmark an erythrocyte and follow its fate in the circulation or in some secluded organ." This is not entirely true, for there are certain natural "earmarks" by which the transfused red blood cell can be identified in the recipient's circulation; namely, the agglutinogens A, B, M and N. The agglutinogens A and B are well known, since on them depends the existence of the four Landsteiner blood groups, O, A, B, and AB, which are used as the basis for the selection of donors for blood transfusion. The agglutinogens M and N were discovered in 1927 by Landsteiner and Levine by using immune rabbit serum obtained after injecting human blood into rabbits. With the aid of the anti-M and anti-N reagents which they prepared, Landsteiner and Levine were able to differentiate three additional types of human blood: type M or M + N— (blood containing agglutinogen M but not agglutinogen N), type N or M — N + (blood containing only agglutinogen N), and type MN or M + N + (blood containing both agglutinogens, M and N).

The technic used for tracing the fate of the transfused blood cell is simple, provided potent, specific anti-M and anti-N serums are available and the investigator has had sufficient experience in working with these reagents. Suppose, for example, that donor and recipient both belong to group A, but the donor belongs to type M and the recipient to type N. Before the transfusion the recipient's blood naturally gave no reaction with the anti-M serum. After the transfusion, however, if a suspension of the recipient's blood is tested with anti-M serum there will be a partial agglutination, since the donor's blood in the patient's blood stream will react with the serum. This test may be repeated as frequently as desired, from day to day and from week to week. The time it takes for the recipient's blood to return to its original status, namely, to give no trace of agglutination with the anti-M serum, is the maximum lifetime of the transfused blood cells. Using this method, Landsteiner, Levine and Janes (*Proc. Soc. Exper. Biol. & Med.* **25**:672 [May] 1928) were able to recognize transfused blood cells in a patient's circulation for more than seven weeks after the transfusion (no tests were made after that time). In a study on a series of ten cases, I have found that the life of the transfused blood cell probably averages between 80 and 120 days (unpublished observations).

If it is desired to trace the decrease in *number* of transfused blood cells from day to day, a simple modification of the technic is necessary. In the illustration given, in which type M blood is transfused into a type N individual, if, subsequent to the transfusion the blood cell suspension of the recipient is tested with anti-N serum, all the blood cells except those derived from the donor will agglutinate. The unagglutinated cells can be counted as follows: Blood is taken as for a red blood cell count, using anti-N serum in place of the usual diluting fluid. The suspension obtained is transferred to a small test tube and allowed to stand for from two to three hours at room tempera-

ture (when the agglutination will be complete). The tube is then gently shaken until the unagglutinated cells are evenly suspended, and a small drop of the mixture is transferred to a counting chamber, care being taken to avoid the clumps. Using this technic, I have found that the decrease in the number of transfused cells is directly proportional to the time, from one third to one fourth of the transfused blood disappearing each month. This type of continuous decrease is to be expected under the assumption that all red blood cells have approximately the same duration of life, since, naturally, the oldest cells will disappear first and the youngest survive the longest.

The methods just described can be applied in any hospital where transfusions are performed, since the agglutinogens M and N play no part in transfusion reactions and therefore need not be taken into account when donors are selected for blood transfusions. Transfusions of type M and MN blood into type N individuals, and of type N and MN blood into type M individuals, must therefore occur very frequently. Even before the agglutinogens M and N were discovered, however, Winifred Ashby (*J. Exper. Med.* **29**:267 [March] 1919; *Arch. Int. Med.* **34**:481 [Oct.] 1924) had used a similar method for determining the life of transfused blood cells, with the aid only of the four Landsteiner blood groups. Ashby succeeded in demonstrating the presence of the blood of group O donors in the circulation of Group A and group B recipients for periods up to 100 days after transfusions, performed under the principle discovered by Ottenberg, that group O individuals can serve as "universal donors" for emergency transfusions. Using Ashby's method, Wearn, Warren and Ames (*Arch. Int. Med.* **29**:527 [April] 1922) found that transfused blood may remain in circulation for periods of from 59 to 113 days, the average being 83 days.

Curiously enough, despite all this work, most textbooks still give the life of the erythrocyte as thirty days.

ALEXANDER S. WIENER, M.D., Brooklyn.
Division of Genetics and Biometrics
of the Department of Pathology,
Jewish Hospital of Brooklyn.

McDONAGH METHOD DISAVOWS MICRO-DYNAMICS

To the Editor:—Your Bureau of Investigation rather belies its title in the reference it made to me and my work in THE JOURNAL, January 6. I am unaware of any investigation it has made of my work, in which I have been engaged for nearly thirty years, and had it done so it would not have made the misstatements it has. Indeed, THE JOURNAL has always steadfastly refused to review my books and has done everything possible to prevent my views from becoming known. Surely, investigation inside medicine would be more fruitful than outside medicine. If medicine rendered the public the service it should, there would be no room for quacks. If my attempts to place medicine on a sounder basis than it now stands are misjudged, it should be your duty to expose them before going further afield. But your refusal to deal with what you fear is becoming a cult suggests they are right, in which case it is equally your duty to allow light to get at them.

Theories are intricate and involved only when there is absence of desire to understand them. In this case they are extraordinarily simple because not a single word has been coined to explain them; hence the mention of "private nomenclature" is a misstatement of fact. I am completely disinterested in any particular remedy and not one of the many I have introduced into medicine is proprietary, of secret composition, or carries a peculiar name. Taking one of the remedies to which you refer, viz., "S. U. P. 36," it is the best pyrexial antidote extant provided it is prescribed in time. In measles, for example, it shortens the attack, reduces the malaise and prevents complications. It can be made by any good chemist, its composition has been published in my writings since 1923, and the name is a contraction of its chemical nature, *symmetrical urea of para*-benzoyl-para-amino-benzoyl-1-amino-8-naphthol-3-6-sodium sulphonate. I have nothing whatever to do with the introduction of "Antrypol."

J. E. R. McDONAGH, London, England.

TRICHINA IN BLOOD

To the Editor:—In THE JOURNAL, April 14, page 1249, in answer to the question of a New Jersey physician, reference was made to the demonstration of the larval form of the trichina in the circulating blood, as follows:

> The first and apparently so far the only other demonstration of trichinous larvae in the circulating blood in man is by W. W. Herrick and Theodore C. Janeway (Demonstration of Trichinella Spiralis in the Circulating Blood in Man, *Arch. Int. Med.* **3**:263 [April] 1909), who found them in fresh samples of blood after laking with 3 per cent acetic acid.

In the *New England Journal of Medicine* (**201**:816 [Oct. 24] 1929) I reported a case with Dr. Ralph E. Bicknell in which the larval form of the trichina was demonstrated in the fresh samples of blood by the same technic.

S. SEYMOUR HORLICK, M.D., Boston.

STAPHYLOCOCCUS TOXOID

To the Editor:—May we offer the following data to support the conclusions reached by Kindel and Costello in their study of staphylococcus toxoid in the treatment of pusular dermatoses (THE JOURNAL, April 21, p. 1287). We, too, have treated but a small number of patients, but our results, like theirs, were so definitely unsatisfactory that we feel impelled to record them, especially since commercially prepared toxoids are gaining wide use. Our patients were from the Department of Dermatology, University of Illinois College of Medicine. We treated about fifty patients, of whom only twenty-three received the minimum dosage recommended by Dolman. This group included twelve cases of pustular acne vulgaris, five of sycosis barbae coccygenica, four of furunculosis, one of pustular folliculitis of the scalp and one of dissecting cellulitis of the scalp (perifolliculitis capitis abscedens et suffodiens). The toxoid material was prepared essentially according to the specifications outlined by Kindel and Costello. We used weaker concentrations than did they, but in larger volumes, injected subcutaneously. Of the twelve patients with acne, three showed some improvement but did not get well, seven were unaffected and two definitely became worse. The injections were given twice each week, in one case for four months, and the average number of injections was twelve. There was no noticeable improvement in any of the patients with sycosis barbae or in the two patients with scalp lesions. These received an average of eighteen treatments and as a group they seemed to show milder local reactions to the injections. Of the four patients with furunculosis, two were not influenced by the toxoid and two responded promptly and favorably. Of the latter, one returned in six weeks with a recurrence. These patients received an average of nine injections. They showed local reactions to a greater degree than did the other patients, and we too noticed that in all our cases the local reactions became lessened with succeeding injections. In two instances there were systemic reactions with slight rise of temperature, muscle pains and malaise. One man with recurrent furuncles, while under treatment, and after he had received an "adequate" number of injections in the arms, developed a huge carbuncle on the thigh, which required surgical intervention.

The results in our other patients were equally disappointing; certainly they were far less satisfactory than with the usual methods of treatment. We are aware that favorable

results have been reported elsewhere, but our observations so paralleled those of Kindel and Costello that we thoroughly indorse their recommendation to the profession that caution be exercised against becoming overenthusiastic about the value of staphylococcus toxoid until much more study has been made.

THEODORE CORNBLEET, M.D.,
HERBERT RATTNER, M.D.,
Chicago.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

CORONARY THROMBOSIS ASSOCIATED WITH FALL IN BLOOD PRESSURE

To the Editor:—A woman, aged 56, has had a blood pressure averaging 200 systolic for at least five years. Three months ago she had an attack during which her pulse rose to 120 but was regular except for an occasional extrasystole; the pressure first dropped to 170/80 and then to 130/80; there was no decrease in urinary output and the only subjective signs were liver tenderness and gastric disturbances. Of course she is digitalized and her pulse varies between 70 and 80, never lower. The urine contained a few hyaline casts at first but now is normal. Hemoglobin is 86 per cent and blood pressure remains at 130/80. How long would you keep this patient in bed and what would be the guide in allowing her to return to restricted activities? At present she has no complaints. I would sincerely appreciate your discussion. Please omit name.

M.D., California.

ANSWER.—It is difficult to evaluate properly the information given, because some most significant facts are omitted. The height of the diastolic tension prior to the attack is important. It is also notable that no mention is made of dyspnea, or perhaps change of color, at the time of the attack. Three possible explanations of the acute attack can be considered on the basis of the data at hand: (1) acute relative hypotension with the cardiac manifestations secondary, (2) cardiac decompensation, and (3) coronary occlusion.

Not knowing the height of the diastolic tension before the acute disturbance, it is impossible to do more than include the first hypothesis among the possibilities. It is well known that any abrupt reduction of the arterial tension, as sometimes occurs in spastic hyperpiesis, induces a notable tachycardia through a reflex by way of the sensory fibers in the aorta and that, inversely, a rise in arterial tension is accompanied by a bradycardia. However, there is no history to indicate that sudden reduction of the arterial tension was the primary phenomenon. Furthermore, with exceptions, such acute periods of relative hypotension are transient unless due to a fundamental cardiac change. Cardiac decompensation occurring because of myocardial exhaustion secondary to the hypertensive disease is rarely so acute in onset and almost invariably presents the typical picture of congestive cardiac decompensation: marked dependent edema, dyspnea, pulmonary edema and gross hepatic engorgement. The description of the attack is by no means characteristic of such a clinical picture.

Coronary occlusion is the most logical diagnosis on the basis of the facts as presented. Perhaps one of the most significant diagnostic points in coronary thrombosis is a rapid and prolonged fall in arterial tension. When present, a pericardial friction rub is pathognomonic and is usually heard within the first twelve hours. Coronary thrombosis without pain is not rare; many reports of such instances have appeared in the literature, the accuracy of the diagnoses having been confirmed by necropsy. Many minor attacks, involving small branches of the coronary vessels, may be wholly asymptomatic and result in gradual replacement with collagenic connective tissue: chronic fibrous myocarditis or myocardosis. When pain does occur in coronary thrombosis it is frequently unlike that seen in angina pectoris, being more commonly referred to the upper part of the abdomen and the epigastric area. This patient presented such complaints.

As yet no fully satisfactory explanation has been presented of the acute, marked and often persistent drop in arterial tension associated with coronary accidents. This fall differs from that observed in congestive heart failure in the rapidity of the fall and especially in the marked reduction of the diastolic tension. In congestive failure prior to actual decompensation or during the period of low cardiac reserve, a slowly falling systolic tension with a relatively fixed diastolic tension has long been recognized as a sign of impending cardiac exhaustion, particularly in hypertensive disease. It is quite obvious that here the change in tension must have involved the diastolic as notably as the systolic tension. It is presumed, and on significant evidence, that this characteristic acute relative hypotension occurring with coronary thrombosis is largely reflex in origin. It closely resembles true shock in its mechanism. It is only through extensive arteriolar dilatation that such marked reduction in the diastolic tension is possible; the route of the cardiac-arteriolar reflex is unknown.

It may perhaps be pertinent to emphasize the fact that despite the long habituation to extensive hypertension there was little if any evidence of renal impairment resulting from the relative hypotension. The arterial tension after the attack was relatively low for this particular patient, although well within the normal range. The transient appearance of a few hyaline casts does not imply that the fall in arterial tension caused them; rather there may have been a mild proteinuria and casts in the urine for some time prior to the attack (as is common in hypertensive disease), which persisted for a short time after the reduction in arterial tension. Here, then, is another of a great many clinical examples illustrating that even marked reduction of the arterial tension does not result in renal functional inadequacy. It is the contention of Whipple that the state of hypertension is largely a compensatory mechanism to maintain an adequate renal circulation and that reduction to normal levels is dangerous from the point of view of inducing renal failure thereby. Repeated clinical observations contradict this contention, especially when the reduction in arterial tension is relatively gradual. It can be said that in most instances the renal circulation is not more efficient in hypertensive individuals but less so, and with reduction of the excessive hypertension there is improvement in the renal function and therefore, presumably, also of the renal circulation.

The present status of the patient appears to be good, but such freedom from symptoms may be misleading. On the quite justified assumption (no more is possible with the data on hand) that the attack consisted in a coronary thrombosis, the most significant therapeutic measure available is rest, especially prolonged rest. Confirmation of the diagnosis and evaluation of the approximate extent of injury might be greatly aided by electrocardiographic study. To rely wholly on the electrocardiogram, however, would be most unwise. If the patient has been in bed for three months, as suggested by the query, that should suffice for the period of absolute bed rest. Repair and rehabilitation take time and the older the person the longer is the time required for repair. Her activity should be resumed very gradually, the extent of activity being based largely on the cardiac response to increased effort. After all, as Sir James Mackenzie declared, it is the ability to respond to an increased burden that best measures the degree of cardiac reserve. At present, with a normal pulse rate, full digitalization is not necessary or desirable, but small doses of digitalis for some months may be of value, as was recently reemphasized by Christian. The continuous administration of some of the theobromine coronary dilators, such as theophylline-ethylenediamine or theophylline-calcium salicylate offers perhaps some prophylactic protection against recurrence.

BENIGN OR ESSENTIAL HYPERTENSION

To the Editor:—I have recently heard the term "benign hypertension." In none of my textbooks on medicine and medical diagnosis was I able to find this condition mentioned or otherwise discussed. I shall be much indebted for any information you may give me briefly on the subject. Kindly omit name.

M.D., Connecticut.

ANSWER.—The term "benign hypertension" has been loosely used to be more or less synonymous with "essential hypertension." For many years it was thought that there were two types of arterial hypertension: the type associated with extensive renal injury and renal functional impairment and the form in which the hypertensive changes existed independent of any demonstrable gross renal impairment. The latter type has often been loosely and really incorrectly termed "benign hypertension," or "essential hypertension." It is now known, and generally conceded, that there is but one fundamental form of hypertensive disease, which may or may not be associated with extensive nephritis (Fishberg, A. M.: The Arteriolar Lesions of Glomerulonephritis, *Arch. Int. Med.* **40**:80 [July] 1927). Naturally, when nephritis coexists as a complication the prognosis is distinctly darker and therefore the situation may then be considered as less "benign." In more recent years the term "malignant hypertension" has been introduced to designate that type of arterial disease characterized by a rapidly progressive arterial degeneration and a relatively short course before fatal

termination. Careful studies (Keith, N. M.; Wagener, H. P., and Kernohan, J. W.: The Syndrome of Malignant Hypertension, *Arch. Int. Med.* **41**:141 [Feb.] 1928) have revealed no fundamental differences in the processes of this "malignant" form except for the rate of progression. As yet no adequate explanation of this difference has been presented. Perhaps the term "benign hypertension" was employed to contrast this so-called malignant form.

In the pathogenesis of hypertensive disease (Stieglitz, E. J.: Arterial Hypertension, New York, Paul B. Hoeber, Inc., 1930) the arterioles are first intermittently spastic, later continuous hypertonicity occurs and still later degeneration of the arteriolar musculature permits of fibrotic scarring, so that the end-result is an extensive arteriolarsclerosis. Thus the single disease progresses through various phases; early in the course the changes are reversible and are amenable to therapeutic correction; later, when fibrotic scarring has occurred, the changes are irreversible, irrevocable and not amenable to therapy. In a single individual in different stages of the disease the situation shifts slowly from a potential threat to a permanent irrevocable injury; early the disease may be considered "benign," but unless the processes are interrupted the progression is onward to more and more severe permanent injury. It is felt that the use of the terms "benign" or "essential" hypertension is distinctly undesirable, as they are both misleading and do not rest on a firm scientific foundation. It must be emphasized that hypertensive arterial disease has a distinctive consistent pathogenesis and that in this progression of changes the clinical, pathologic and physiologic states gradually change.

ARTHUS PHENOMENON, OR LOCAL ANAPHYLAXIS

To the Editor:—I wish to report an unusual series of reactions following the use of typhoid-paratyphoid vaccine. A boy, aged 8 years, was given 0.25 cc. of the vaccine, with nothing unusual happening until about the fourth day, when a localized abscess about 2 cm. in diameter formed on the arm. This was opened and drained, since it was thought at the time that the aseptic technic might have been at fault. However, when the same thing occurred following a second dose of about 0.35 cc., given with extreme precautions, I felt quite sure that I was dealing with an unusual reaction of the tissues. This abscess was not opened and was absorbed in about two weeks. Following the third dose of about 0.5 cc. there was a moderately severe systemic reaction, a general malaise lasting from two to three days. This time the local reaction was more severe than ever—an abscess about 4 cm. in diameter. This ruptured spontaneously, when the youngster had a fall. After that the arm healed up rather quickly, and no further vaccine was given at the time. Three other patients were immunized with vaccine from the same vial used for this patient, with no unusual reactions. Dec. 19, 1933, the same patient, now a young man of 18, was given 0.1 cc. of the vaccine, with the idea of starting out cautiously and avoiding untoward reactions. A week later he had quite a swelling on his arm—about 2 cm. in diameter, not painful—which looks to be another sterile abscess. There was no systemic reaction noted. Will you please give us your opinion of the nature of these reactions, tell me of other reported cases, and advise me about the advisability of further immunizing doses. Please omit name.

M.D., California.

ANSWER.—The description of sterile abscess formations at the site of typhoid inoculations is that of the Arthus phenomenon, or local anaphylaxis. It is exceedingly uncommon in typhoid injections, also in other protective injections, except when serum is used. It is more common in such instances, and a number of instances following antiserum injections have been reported.

HEMIATROPHY OR ARRESTED DEVELOPMENT OF BODY

To the Editor:—A man, aged 43, 5 feet 8 inches (173 cm.) in height, complains of severe pains in the right shoulder and arm, present for a period of two years. The patient shows a distinctly smaller left half of the body, including the face, upper and lower extremities, and chest, the upper extremities being not only smaller but also shorter. The left nipple is present but there is no breast, although the right breast is unusually well developed. There is no paralysis or previous history of disease to account for this condition, which has been evident from early childhood if not from birth. Blood, urine and all neurologic examinations are otherwise negative. Roentgen examination of the spine, shoulder and joint is negative, cholecystography gives negative results. Roentgen examination revealed a mediastinal mass, probable an aortic aneurysm. What is the disease and what is the cause of the lack of development of an entire half of the body? Kindly omit name.

M.D., New York.

ANSWER.—No doubt the changes in the mediastinum will explain the pain referred to in the shoulder and arm.

The central nervous system is not myelinated until one or two years after birth. Injuries during birth or in early infancy are therefore more likely to be permanent.

Cerebral hemorrhages are known to be rather common at birth and might explain the condition of asymmetry. They most commonly produce spastic paraplegia, although there may be symptoms without spasticity.

The diagnosis in this case would probably come under congenital muscular deficiency or early arrest of growth caused by injury or infection. In the first condition, lack of development of a portion of the brain itself might be present, but one would expect to find some mental changes or perhaps epilepsy. In the latter condition, birth injury would be the most likely cause in absence of a history of illness preceding the arrested development.

The asymmetry is also similar to that present in progressive hemiatrophy, or Romberg's disease. The onset here is usually after ten years of age, although it has been recorded as being congenital. The symptoms are those of progressive atrophy and not arrested development, although the congenital type might be difficult to rule out. However, the trophic changes are quite extensive in hemiatrophy. It is usually limited to the face, especially in the region supplied by the fifth nerve.

The location of the lesion in hemiatrophy is probably in the sympathetic nervous system but may be in either the central or the peripheral portion. The cause has not been determined from the few necropsies performed.

Hemiatrophy is closely related to scleroderma.

In the case described there are probably some pathologic changes in the sympathetic nervous system the nature and actual site of which cannot be accurately surmised from present knowledge.

PREVENTION OF VENEREAL DISEASE AND CONCEPTION AFTER RAPE

To the Editor:—Please give me information regarding the best approved technic to follow after rape to prevent venereal disease and, if possible, to prevent conception. Has such a procedure ever been worked out with accuracy similar to the methods used to prevent venereal disease after exposure in men? I have no specific case in mind but would like to be prepared, to the best of my ability, to combat such conditions. It is evident that at least three types of precaution should be taken: (1) against gonorrhea; (2) against syphilis; (3) against conception. Please discuss fully. Has any progress been made in any states toward legalizing properly carried out abortions if conception occurs after rape? Please omit name.

M.D., California.

ANSWER.—No technic has been worked out to prevent venereal disease and conception following rape, chiefly because instances of true rape are seen infrequently. Most instances of so-called rape do not come within the definition of rape; namely, "carnal knowledge of a woman by a man accomplished by force and against her will." Children especially are prone to make false accusations, but adult women also make false charges occasionally.

Usually a case of rape is not seen for at least a few hours after the crime has been committed. At this time little can be done to prevent conception, because in nearly all instances in which conception takes place the fertilizing spermatozoon gains access to the uterine cavity within a few minutes after coitus. It reaches the fallopian tube shortly afterward, but even if it did not it is possible, though hardly likely, that a curettement performed when the patient is first seen will help. For a curettement to be effective in such a case, every bit of endometrium above the basalis must be thoroughly removed and also all the spermatozoa in the uterine cavity. Should a spermatozoon succeed in fertilizing an ovum in spite of a curettement, it is possible for the ovum to find a sufficiently prepared endometrium for embedding because it usually takes about ten days from the time of coitus to the time of implantation in the endometrium. It may be dangerous to perform a curettement immediately after rape, because not infrequently the offender has gonorrhea. Smears should, of course, always be made of the vaginal contents to see whether gonococci are present. If such organisms are found, a curettement is contraindicated. If the smears fail to show gonococci, this does not imply the absence of gonorrhea. The disease may not manifest itself until a number of days later. Evidences of syphilis will surely be absent if the woman did not have the disease before the rape was perpetrated, even though the offender has active syphilis, because of the incubation period of syphilis.

When a case of rape is seen, one should obtain careful information about the exact time of occurrence of the crime and make a thorough examination not only of the external genitalia and surrounding tissue but also of the entire body for marks of violence. It is necessary for the physician to know this information, because he will undoubtedly be asked about these facts in court. Smears should be made of any discharge seen on the external genitals and also the contents obtained from the vagina. Careful notes should be made of the character of the vaginal contents, especially as to whether spermatozoa, blood and pus cells are present. Immediately after all the examina-

tions have been made, the vagina should be irrigated with a weak mercuric chloride or potassium permanganate solution. Then the entire vagina but especially the region of the Bartholin gland ducts, the cervix and the urethra should be swabbed with a 2 per cent silver nitrate solution. In addition, one of the prophylactics used by men for syphilis, such as 33 per cent ointment of mild mercurous chloride, should be used on the external genitalia, in the vagina, on the external urethral orifice and on the cervix. Two weeks later and again at four weeks, smears should be made from the cervix, vagina and urethra, and blood should be subjected to a Wassermann or Kahn test. If the blood test is positive, another test should be made to verify it. If the Wassermann or Kahn test is negative, three more tests should be made at intervals of three weeks.

As far as is known, no state in this country has made provisions for the induction of abortion in cases of rape.

ETIOLOGY OF SWELLING OF ARM

To the Editor:—A man, aged 25, a clerk in a local grocery store, whom I have known since childhood, whose habits are good, and who has no history of disease excepting that his father died of diabetic coma, has enjoyed good health all his life. Dec. 26, 1933, he came to me with his left arm swollen from the deltoid down to the tip and a little cyanosed, with a little ache in the elbow. A roentgenogram of the elbow gives negative results. Since that he has responded to rest and carrying the arm in sling, but it remains swollen and a little boggy-like, hardly boggy, but with a little boggy feel. Then there have appeared since some crows' feet blood vessels round the inside of the deltoid. His brother says that he took a strong hold of his arm, not hard but just firm, but he doesn't think that would cause it. He does not recall hurting it, but he did handle 100 pound sacks of sugar during the holiday rush and noticed that the arm became somewhat tired. He may have strained it. I made a diagnosis of phlebitis of the arm, although I have never seen a case like it in my thirty-four years of practice. I wish that you would advise me as to whether this condition occurs in the arm. I have never seen one. He has a good grip on both hands. This has been reported as a compensation case and I wish to know whether my grounds are correct. Please omit name.

M.D., Minnesota.

ANSWER.—The swelling of the arm might be due to a number of conditions.

A slight rupture of some muscle fibers or rupture of a blood vessel in the muscle or under the fascia would produce the symptoms described. A complete rupture of the long head of the biceps tendon occasionally occurs from a severe muscular effort.

Phlebitis may occur in the arm. This condition would involve the entire distal portion of the extremity with edema of the forearm. There should be some evidence of inflammation with tenderness along the veins. Some focus of infection is usually present.

While the possibility of a neoplasm in this case is rather slight, one must bear in mind the occurrence of a sarcoma with the dilated veins described.

Either phlebitis or a deep hematoma might produce peripheral swelling of the extremity. Evidence of inflammation locally and of general symptoms should differentiate them. An increased leukocyte count with an increased percentage of polymorphonuclears would speak for phlebitis.

In the absence of a neoplasm or a history of a definite injury preceding the symptoms, the evidence of the heavy work described should establish it as a case for compensation.

USE OF TUBERCULIN SKIN TEST

To the Editor:—What is the present consensus relative to the value of the routine use of the tuberculin skin test? What beneficial knowledge, either to the individual or to the physician, would be derived by giving the tuberculin cutaneous test as a routine procedure in identical dosage to school children of various ages and degrees of hypersensitiveness? From my limited experience, such testing is of no value and may do harm to the susceptible child. Please omit name.

M.D., Texas.

ANSWER.—Physicians who have had an extensive experience with the use of the tuberculin skin test are enthusiastic about its value. There are two beneficial facts obtained from a positive test: First, the person reacting has been exposed either directly or indirectly to some person or some animal suffering from tuberculosis or acting as a carrier and spreader of tubercle bacilli. Seeking this source often results in finding an open case of tuberculosis in a person not previously suspected of having the disease. The finding of such a case may be of great benefit to the patient, since his disease may not have reached too advanced a stage for successful treatment. Even if it cannot be treated successfully, isolation or teaching methods of prevention of spread may save the family and community from contamination with tubercle bacilli from that particular source.

Second, the individual who reacted positively to the test is known to have a focus of tuberculosis somewhere in his body. This focus may harbor living and virulent tubercle bacilli over many years or even a lifetime. The positive test establishes the fact that the tissues are sensitive or allergic to the products of growth of tubercle bacilli. Allergy is a dangerous factor; therefore the person who reacts positively to the test, although he may appear in perfect health at the time, is a potential case of a reinfection type of tuberculosis from either exogenous or endogenous sources.

These facts make the routine administration of tuberculin tests to children of various ages and degrees of hypersensitiveness of great value, since a negative reactor may become a positive reactor after a subsequent exposure to tuberculosis. In many parts of the country not more than 10 or 20 per cent of children of school age have been contaminated with tubercle bacilli. Obviously, the lower this incidence becomes the more valuable is the selectivity of the test.

Identical dosage is necessary so that a standard is set up, the deviation from which gives a measure of the individual's reaction. The dose of tuberculin used in testing school children causes no harm whatever, even if the child has a reinfection type of disease.

DANGERS TO WORKERS IN NITROCELLULOSE SOLVENTS

To the Editor:—A primipara, aged 18, employed in a bakelite factory, working in nitrocellulose solvents (amyl and ethyl acetate), developed oliguria and albuminuria, without casts, a blood pressure of 96 systolic, 46 diastolic, and a mild secondary anemia. Her work, in a close room, amid the fumes arising from these solvents, requires her to keep her ungloved hands more or less constantly wet with this solution. Is it to be regarded as probable that these chemicals are etiologic factors in this nephrosis?

RICHARD BARTLETT OLESON, M.D., Lombard, Ill.

ANSWER.—If amyl and ethyl acetates were the only solvents of bakelite to which exposure was provided, it might be doubted whether the clinical condition described should be attributed to these substances as the cause. The toxicity of these agents is at this time believed to be limited to the production of a mild inflammation of the eyes, nose, throat and bronchi. However, it is frequently true that solvents other than those mentioned are employed in the procurement of the solution of the bakelite resin. In the past, benzene (benzol) has been extensively used. Methanol has been considered a practical solvent for bakelite and possibly has been so used. In either case the condition described might have been brought about as an occupational disorder. Differential blood counts in which a leukopenia is detected would suggest the possibility of benzene poisoning. The detection of wood alcohol or its decomposition products in the urine would tend to place responsibility on that agent as a causative factor. Further inquiry should be made as to the solvents other than amyl and ethyl acetates and, unless others of greater toxicity are established, belief that the condition described is of occupational origin seems unwarranted.

USE OF SODIUM HYPOCHLORITE IN INFECTED WOUNDS

To the Editor:—Please give me the correct technic for using sodium hypochlorite solution in the irrigation of infected wounds.

L. A. CROWELL, JR., M.D., Lincolnton, N. C.

ANSWER.—Sodium hypochlorite solution should contain between 0.45 and 0.50 per cent of available chlorine. If it is below that it is too weak and if it is above that it is too caustic.

An apparently satisfactory preparation is known as hychlorite, described in New and Nonofficial Remedies, 1933, page 216. When diluted with seven volumes of water, the solution has the same available chlorine content as surgical solution of chlorinated soda and is isotonic. It deteriorates at the rate of about 12 per cent a year.

A preliminary cleansing of the skin and the wound is necessary. Excision of all lacerated or devitalized tissue should be done. All pockets of the wound should be explored and Carrel rubber tubes introduced for instillation of the solution. Ordinarily, counterdrains are not required.

The drainage tubes are of fine pure rubber, approximately 15 to 25 cm. long, having a diameter of 5 mm. and a lumen of 3 mm. The ends are tied off with linen or silk and, beginning at the distal end, from six to twelve small holes, approximately 0.5 mm. in diameter, are pierced at intervals of 0.5 cm. One may make these with a special punch, going through the two sides at the same time and staggering the direction.

The number of tubes used must be decided by the size and depth of the wound. All parts of the wound should be bathed by the solution coming out of the tubes. To prevent the tubes

from bunching in the wound, strips of gauze are placed between them, which also helps to retain the solution.

For superficial wounds, the Carrel tubes are covered with Turkish toweling and strips of gauze are placed between the tubes. A large pad of nonabsorbent cotton may be placed around the extremity. Simple wet compresses are sometimes used and changed frequently in superficial wounds.

The skin should be protected by covering with strips of gauze impregnated with petrolatum.

At present, intermittent irrigation every two hours day and night with just enough solution to fill the wound has been most satisfactory. This is not always possible, and good results may be obtained by less frequent irrigation, although it is not so efficient in sterilization.

The wound should be redressed daily, the skin being cleansed and the tubes renewed. In certain conditions the change of dressings may be delayed for two or three days, provided the irrigations are kept up.

Bacteriologic films are made of the wound discharge from day to day and, when sterile, deep wounds may be sutured.

OTOSCLEROSIS

To the Editor:—A patient, aged 30, is suffering from otosclerosis of two and a half years' duration. Blood chemistry, the Wassermann reaction and other laboratory data are all negative. A coexisting catarrh has cleared up under eustachian catheter inflation and the application of silver nitrate. Is there anything that will help to check the otosclerosis? Is radium applied through the external auditory meatus of any value in checking the progress of the disease? Is radium harmful? Please omit name.

M.D., New York.

ANSWER.—The etiology of otosclerosis is still unknown, despite the extensive research that is being conducted regarding this problem in a number of centers throughout the world. Nothing definite has been developed regarding the therapy, so that it is impossible to state definitely what can be done to check the progress of the disease. Radium, x-rays and other measures have been used to date, but none have given any definite result regarding either the arresting of the disease or its cure.

ABSENCE OF UVULA

To the Editor:—In the routine examination of school children I have noticed absence of the uvula in many that have had their tonsils removed. I have noticed this in several cases of my own in which I felt certain that I did not accidentally include the uvula in removing the tonsil. Can this disappearance of the uvula following tonsillectomy be explained in any other manner than accidental removal? Kindly omit name.

M.D., New York.

ANSWER.—Spontaneous disappearance of the uvula has never been recorded. As a rule, when the loss of the uvula is noted after tonsillectomy, the uvula has been inadvertently caught in the snare during the removal of the tonsil. However, its ablation is of no significance as long as no other portion of the soft palate is removed. Aside from operative procedure, it is not likely that there would be disappearance of the uvula unless some ulcerative process destroyed the tissue.

DISCHARGE OF SYPHILITIC PATIENT FROM TREATMENT

To the Editor:—An automobile mechanic, aged 34, who consulted me, June 28, 1932, was very nervous and with a symmetrically enlarged thyroid; the blood pressure was 90 systolic, 60 diastolic; the pulse rate was 105; the temperature was normal. I put him on tincture of iodine, twenty drops three times a day. July 14, his systolic blood pressure was 110, diastolic 60; pulse 95; temperature normal. September 15, he came with a hard chancre on the penis but refused to have a blood test made. October 27, he returned, still with a chancre, and allowed a blood test to be made. Kolmer's Wassermann test was 4442 — and the Wassermann reaction was 2 plus. I gave him bismuth salicylate in oil, October 27, and ordered daily inunctions with mercurial ointment, also saturated solution of potassium iodide to toleration. Beginning October 29, I gave him one injection of neoarsphenamine, 0.3 Gm., and three other doses of 0.6 Gm. at intervals of five days owing to the smallness of his veins, which caused trouble to get into them. After the fourth dose I switched to bismuth in oil at intervals of five days and kept it up until Jan. 7, 1933, when I had another Wassermann test made, which was reported negative. I then stopped all injections but kept him on the inunctions and potassium iodide until the first of July, having Wassermann tests made every month up to July 1, all being negative, as was the test Oct. 1, 1933, and Jan. 1, 1934. He is apparently in excellent health at present and is not taking any medicine. A Wassermann test of his wife was returned negative at the time he first came in. Will you be good enough to advise me what I should say to a patient with the foregoing history. Please omit name.

M.D., Maryland.

ANSWER.—The patient should be told that he is clinically and serologically well but that he should be kept under observation for several years with periodic blood tests and careful physical check ups. A spinal fluid examination is an additional safeguard and should be done some time during the second year. One should hesitate to employ the word "cure" in cases of syphilis in which treatment was started in the primary seropositive stage, as it has been frequently stressed that the golden opportunity for a cure is in the primary seronegative period. Nevertheless this patient apparently has what might be termed an abortive cure. Unless there is a clinical or serologic relapse, further treatment will probably not be necessary.

TREATMENT OF MASTURBATION BY OPERATION ON NERVE

To the Editor:—I read an article in the Cincinnati *Lancet-Clinic* (n. s. 37, 1896) by J. H. McCassy, M.D., about the exsection of certain nerves of the penis as a cure for masturbation in young men. In some cases he advises division of the dorsal nerve of the penis. He also says that the nerve can be cut and be made to reunite, after a time as long as from two to three years. Dogs and horses treated in this way regained their sexual power. Could you tell me a physician, preferably near here, who has done this operation? Also is the vas deferens ever cut for this purpose, and with what success? Who does this? Please omit name.

M.D., Ohio.

ANSWER.—The operation referred to is technically quite simple and any genito-urinary surgeon could perform it. There are many excellent specialists in Cleveland. We doubt, however, whether any specialist would today perform this operation for masturbation. It is not mentioned in any modern works on the subject. In the first place it is entirely too hazarous, as one could not at all be certain that the nerves would reunite and, if they do not, the condition of impotence that might follow would be more serious than the original condition. In the second place, masturbation can at present be treated with most satisfactory results by gentle prostatic massage and instillations of weak silver nitrate solutions (from 1:3,000 to 1:500) with the Bangs sound syringe, without taking any such serious risks as the operation mentioned. The vas deferens is never cut for this condition, as it would do no good.

WASSERMANN-FAST SYPHILIS

To the Editor:—A married woman, aged 28, has been under treatment by me for syphilis for the past two years. The source of the infection is unknown, but the husband has been treated in a government hospital for dementia paralytica and is well at present. The husband states that he has no knowledge of a primary infection. The wife has no knowledge of a primary lesion and never had secondaries. From Feb. 6, 1932, to the present date, she has had almost continuous treatment but presents a positive reaction at all times. I have given her six "courses" consisting of eight injections of neoarsphenamine, from 0.3 to 0.6 Gm., and the first course of a bismuth compound. Ten injections of iodobismitol were given concurrently. Each course was of about two months' duration, with intervals of one or two months between courses, during which she was given saturated solution of potassium iodide. On the last course I substituted silver arsphenamine, from 0.15 to 0.25 Gm. After the fifth course I also gave her four injections of sodium thiosulphate. All told she has had forty injections of neoarsphenamine, eight of silver arsphenamine and sixty-six of a bismuth compound. The Wassermann, Kahn and Rosenthal reactions have remained persistently 3 plus and 4 plus until at the end of the last series with silver arsphenamine, when the report was 2 plus. Spinal Wassermann, colloidal gold and globulin tests give negative results. Her blood pressure is 104 systolic, 70 diastolic. The heart and lungs are normal. No abnormal sensory reflexes are present, and she feels quite well in all respects. In 1932 she weighed from 102 to 104 pounds (about 47 Kg.); at present she weighs 111 pounds (50 Kg.). In your opinion has she had sufficient treatment? Would you consider this a Wassermann-fast case? Should I advise persistent treatment until at least one negative reaction has been obtained? Should silver arsphenamine be continued, since the Wassermann reaction was 2 plus after its use, in spite of the peculiar reaction she had with each injection, especially with the larger dose of 0.25 Gm.? During and following the injection, she experienced a numbness of the tongue, cheeks and lips, rapid pulse, a feeling of nervousness, and fainting and crying. This would subside in about three to five minutes, leaving no after-effects. The injections were given slowly and carefully. Thank you for any suggestions you may give me. Please omit name.

M.D., Brooklyn.

ANSWER.—The amount of treatment that has been administered in this case over a period of two years is adequate. The persistent positive serologic reaction would bring this into the category of Wassermann-fast cases. The Wassermann test should be considered only as one symptom of the disease and continuous treatment might prove detrimental to the patient's health. Intermittent treatment consisting of a short course of one of the arsphenamines, with a bismuth or mercury compound conjointly, followed by iodides and a long rest period without any medication might bring about a reversal of the Wassermann reaction. There is no accepted criterion of treatment for a Wassermann-fast case. Further treatment with silver arsphenamine in view of the peculiar reaction experienced by the patient would not be advisable. Bismuth arsphenamine sulphonate (bismarsen) intramuscularly would be a good substitute.

Council on Medical Education and Hospitals

COMING EXAMINATIONS

ALABAMA: Montgomery, July 10-13. Sec., Dr. J. N. Baker, 519 Dexter Ave., Montgomery.

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY: *Oral.* Cleveland, June 11-12. Sec., Dr. C. Guy Lane, 416 Marlboro St., Boston.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: *Oral* (all candidates), Cleveland, June 12. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh.

AMERICAN BOARD OF OPHTHALMOLOGY: Cleveland, June 11, and Butte, Mont., July 17. Sec., Dr. William H. Wilder, 122 S. Michigan Blvd., Chicago.

AMERICAN BOARD OF OTOLARYNGOLOGY: Cleveland, June 11. Sec., Dr. W. P. Wherry, 1500 Medical Arts Bldg., Omaha.

ARIZONA: *Basic Science.* Tucson, June 19. Sec., Board of Basic Examiners, Dr. R. L. Nugent, Univ. of Arizona, Tucson. *Medical.* Phoenix, July 3. Sec., Dr. J. H. Patterson, 320 Security Bldg., Phoenix.

CALIFORNIA: San Francisco, July 9-12 and Los Angeles, July 23-26. Sec., Dr. Charles B. Pinkham, 420 State Office Bldg., Sacramento.

COLORADO: Denver, July 3-6. Sec., Dr. Wm. Whitridge Williams, 422 State Office Bldg., Denver.

CONNECTICUT: *Basic Science.* New Haven, June 9. *Prerequisite to license examination.* Address, State Board of Healing Arts, 1895 Yale Station, New Haven. *Regular.* Hartford, July 10-11. *Endorsement.* Hartford, July 24. Sec., Dr. Thomas P. Murdock, 147 W. Main St., Meriden. *Homeopathic.* New Haven, July 10. Sec., Dr. Edwin C. M. Hall, 82 Grand Ave., New Haven.

DELAWARE: Wilmington, June 12-14. Sec., Medical Council of Delaware, Dr. Harold L. Springer, 1013 Washington St., Wilmington.

DISTRICT OF COLUMBIA: *Basic Science.* Washington, June 25-26. *Medical.* Washington, July 9-10. Sec., Commission on Licensure, Dr. W. C. Fowler, 203 District Bldg., Washington.

FLORIDA: Jacksonville, June 11-12. Sec., Dr. William M. Rowlett, Box 786, Tampa.

ILLINOIS: Chicago, June 26-29. Supt. of Regis., Dept. of Regis. and Edu., Mr. Eugene R. Schwartz, Springfield.

INDIANA: Indianapolis, June 19-21. Sec., Board of Medical Regis. and Exam., Dr. W. R. Davidson, Room 5, State House Annex, Indianapolis.

IOWA: Iowa City, June 5-7. Dir., Division of Licensure and Registration, Mr. H. W. Tirrell, Capitol Bldg., Des Moines.

KANSAS: Topeka, June 19-20. Sec., Board of Medical Registration and Examination, Dr. C. H. Ewing, Larned.

KENTUCKY: Louisville, June 6-8. Sec., State Board of Health, Dr. A. T. McCormack, 532 W. Main St., Louisville.

MAINE: Augusta, July 5-6. Sec., Board of Regis. of Medicine, Dr. Adam P. Leighton Jr., 192 State St., Portland.

MARYLAND: *Homeopathic.* Baltimore, June 12-13. Sec., Dr. John A. Evans, 612 W. 40th St., Baltimore. *Regular.* Baltimore, June 19-22. Sec., Dr. Henry M. Fitzhugh, 1211 Cathedral St., Baltimore.

MASSACHUSETTS: Boston, July 10-12. Sec., Board of Regis. in Medicine, Dr. Stephen Rushmore, 144 State House, Boston.

MICHIGAN: Ann Arbor, June 5-7 and Detroit, June 12-14. Sec., Board of Regis. in Medicine, Dr. J. Earl McIntyre, 202-3-4 Hollister Bldg., Lansing.

MINNESOTA: *Basic Science.* Minneapolis, June 5-6. Sec., Dr. J. Charnley McKinley, 126 Millard Hall, University of Minnesota, Minneapolis. *Medical.* Minneapolis, June 19-21. Sec., Dr. E. J. Engberg, 350 St. Peter St., St. Paul.

MISSISSIPPI: Jackson, June 26-27. Sec., State Board of Health, Dr. Felix J. Underwood, Jackson.

MISSOURI: St. Louis, June 14-16. State Health Commissioner, Dr. E. T. McGaugh, State Capitol Bldg., Jefferson City.

NATIONAL BOARD OF MEDICAL EXAMINERS: The examinations in Parts I and II will be held at centers in the United States where there are five or more candidates, June 25-27 and Sept. 12-14. Ex. Sec., Mr. Everett S. Elwood, 225 S. 15th St., Philadelphia.

NEBRASKA: Omaha, June 8-9. *Application must be filed at least fifteen days prior to date of examination.* Dir., Bureau of Examining Boards, Mrs. Clark Perkins, State House, Lincoln.

NEW JERSEY: Trenton, June 19-20. Sec., Dr. James J. McGuire, 28 W. State St., Trenton.

NEW YORK: Albany, Buffalo, New York and Syracuse, June 25-28. Chief, Professional Examinations Bureau, Mr. Herbert J. Hamilton, Room 315 Education Bldg., Albany.

NORTH CAROLINA: Raleigh, June 18. Sec., Dr. B. J. Lawrence, 503 Professional Bldg., Raleigh.

NORTH DAKOTA: Grand Forks, July 3-6. Sec., Dr. G. M. Williamson, 4½ S. 3d St., Grand Forks.

OHIO: Columbus, June 5-8. Sec., Dr. H. M. Platter, 21 W. Broad St., Columbus.

OKLAHOMA: Oklahoma City, June 6-7. Sec., Dr. J. M. Byrum, Mammoth Bldg., Shawnee.

PENNSYLVANIA: Philadelphia and Pittsburgh, July 10-14. Sec., Board of Medical Education and Licensure, Mr. W. M. Denison, 400 Education Bldg., Harrisburg.

RHODE ISLAND: Providence, July 5-6. Dir., Public Health Commission, Dr. Lester A. Round, 319 State Office Bldg., Providence.

SOUTH CAROLINA: Columbia, June 26. Sec., Dr. A. Earle Boozer, 505 Saluda Ave., Columbia.

TENNESSEE: Knoxville, Memphis, and Nashville, June 14-15. Sec., Dr. H. W. Qualls, 130 Madison Ave., Memphis.

TEXAS: Fort Worth, June 21-23. Sec., Dr. T. J. Crowe, 918-19-20 Mercantile Bank Bldg., Dallas.

UTAH: Salt Lake City, June 27-29. Dir., Department of Registration, Mr. S. W. Golding, 326 State Capitol Bldg., Salt Lake City.

VERMONT: Burlington, June 20-22. Sec., Board of Medical Registration, Dr. W. Scott Nay, Underhill.

VIRGINIA: Richmond, June 20-22. Sec., Dr. J. W. Preston, 28½ Franklin Road, Roanoke.

WEST VIRGINIA: Wheeling, July 9. State Health Commissioner, Dr. Arthur E. McClue, Charleston.

WISCONSIN: Milwaukee, June 26-29. Sec., Dr. Robert E. Flynn, 401 Main St., LaCrosse.

WYOMING: Cheyenne, June 4. Sec., Dr. W. H. Hassed, Capitol Bldg., Cheyenne.

HOSPITAL MEDICAL LIBRARY SUGGESTIONS

Prepared by the Council on Medical Education and Hospitals

The "Essentials in a Hospital Approved for Interns" contains the following provision:

"There must be a working medical library, in charge of a librarian, which should contain a useful selection of late editions of standard text and reference books and current files of not less than ten of the better medical journals. The library should be inside the hospital building and be located where it is readily accessible to the interns and staff members. Collections of choice reference books in pathology and clinical diagnosis and in roentgen-ray work should be found respectively in the pathologic and roentgenologic departments."

Included in the "Essentials in a Hospital Approved for Residencies in Specialties" is the following medical library requirement:

"The hospital shall maintain, or provide ready access to, an adequate medical library containing modern texts and current journals covering the fields in which residencies are offered."

Since the internship must now be considered as the fifth year in medicine and approved residencies in specialties as postgraduate work, hospitals on such educational bases should provide adequate medical libraries.

While it is impossible for all hospitals to be possessed of an ideal library such as may be found in a medical school and in some of the large teaching hospitals, there are few hospitals that cannot maintain a library of a few choice medical periodicals, standard texts and reference books.

The important function of a medical library in a hospital is to provide attending physicians and interns with material for immediate reference and consultation, intensive study of the patients in the hospital, and the preparation of papers, discourses and special reports to be used in staff meetings, medical gatherings and for publication. Through the library service, both the interns and the regular staff are provided with a means of professional growth and are inspired to greater zest and thoroughness in their work.

Organization

The medical library should be under the supervision of a committee consisting of several members of the staff. Many library committees are such in name only and care should be exercised in order to assure the inclusion of such doctors as would take an active interest in developing the library. The funds for regular additions to the library should be placed at the disposal of this committee.

The hospital that has no library may establish one by various means: (*a*) by an annual appropriation (as little as $300 annually would be sufficient for establishment and expansion); (*b*) by annual subscription from staff members; or (*c*) through gift or endowment in the manner that other equipment and furnishings are given a hospital. A good nucleus, no matter how small, and an assured annual income are the essential requisites of the hospital just beginning its medical library. By the gradual addition of material from year to year a library would be evolved that could be considered an asset to the institution and the community.

The cost of maintaining the library already established is not prohibitive and could be made a legitimate item in the operating budget. When this cannot be done, an excellent plan is for each member of the medical staff to contribute at least a small sum annually toward maintaining and improving the library and this amount could be made a part of the staff dues.

It is desirable that the library should be immediately in charge of a librarian who has had training and experience in library work. In the absence of an experienced librarian, some competent person, frequently the superintendent or record clerk or some other person selected from among the regular administrative personnel, should be placed in charge.

A code of library regulations should be drawn up by the library committee and should be carefully adhered to by the staff members. In general, books or periodicals should not be removed from the library; if this is unavoidable, record should be made of the removal and return.

Location and Furnishings

The hospital medical library should occupy a prominent location, preferably in the hospital building. The actual location of the room will affect directly the amount of usage. If it is placed in an obscure corner of a floor that is used very little as compared with other floors, it will naturally not be visited often.

The location should be chosen with a view to attractiveness, convenience and comfort to those who will use the library. It is often preferable to have it on the administrative floor or in close proximity to the doctors' room.

The room should be sufficiently large to house the books along with the necessary furnishings, and to permit its comfortable use for reading, discussion and conversation. The very atmosphere of the room will have much to do with the extent to which the library will be used.

It would be worth while for those interested in developing such a library to visit similar libraries and study the elements that seem to make them a success. Any well ordered and well used library, whether medical or not, would furnish good suggestions. The best type of shelf or rack is whatever enables the book or journal to be quickly found, easily removed, and easily replaced. There should be a complete card index. Binding journals into volumes adds to their life and usefulness.

Reading Matter

In establishing the library, it is well to purchase only one or two comprehensive textbooks on each subject. Only recent books should be chosen, with the exception of such standard works as are recognized as classics in their respective lines, and which do not grow obsolete with age. The literature on therapy and diagnosis, for example, is changing so rapidly as to warrant the use of the most recent books. In the field of the more fully developed sciences, such as anatomy and histology, literature is more stabilized and longer lived. More recent editions of the standard textbooks should be added from time to time, thus keeping the library up to date with regard to new methods of diagnosis and treatment that have been digested and tested. After a good foundation has been formed, the balance of the apportioned funds may be expended in purchasing varied references that are known to be of particular value. The library should not be allowed to become a depository for antiques, and out of date books should be removed or discarded.

The usefulness and efficiency of the hospital medical library depend not only on a good selection of medical books but also on a well chosen group of periodicals. Limited library funds are often more usefully expended for periodicals than for texts and references. When ample funds are provided there is no great difficulty experienced in the matter of choice.

The hospital medical library may supplement its service by the use of state medical school libraries, county society libraries (in some cases), and the package library of the American Medical Association. The package library consists of collections of reprints and other material on various subjects, prepared for lending to members of the Association and to individual subscribers to publications of the American Medical Association. Information on the loan systems of state medical school libraries or society libraries can readily be obtained on inquiry.

Dr. Vincent[1] at the fiftieth anniversary of the Boston Medical Library in 1926, spoke of the library as being part of the social memory:

"A medical group which works with little or no reference to books and journals suffers serious limitations. Without knowledge of what others have discovered, daily experience cannot be resourcefully interpreted. Avoidable mistakes, waste, and duplication of effort are inevitable. Doctors become victims of empiricism and routine; imagination and initiative lack stimulus; enthusiasm and energy decline; minds grow sterile that under the quickening influence of the recorded experience of others might have been fruitful."

Harvey Cushing,[2] in his address at the opening of the new building of the Cleveland Medical Library in 1926, aptly states: "The soul of an institution that has any pretense to learning comes to reside in its library; . . . and no less well may one gauge the quality of a medical school, of a hospital, of a laboratory, of the individual doctor himself, than by the condition of its library."

1. Boston Medical Library. Celebration of the fiftieth anniversary, Jan. 19, 1926. Boston, 1926.
2. Cushing, Harvey: The Doctor and His Books. Cleveland, 1926.

SUGGESTED PERIODICALS

A selection of a few leading medical journals is indispensable. Obviously, the average hospital library will contain only a portion of the following list. It is desirable that the library of a general hospital should select its periodicals from those included under "Medicine" and "Surgery" before journals from the special lists are made available. The specialties receive a certain amount of attention in the general medical and surgical publications listed below.

ANATOMY

American Journal of Anatomy. Wistar Institute, 36th St. and Woodland Ave., Philadelphia. Bi-M. $15.

DERMATOLOGY AND SYPHILOLOGY

American Journal of Syphilis and Neurology. C. V. Mosby Co., 3523 Pine Blvd., St. Louis. Q. $10.
Archives of Dermatology and Syphilology. American Medical Association, 535 N. Dearborn St., Chicago. M. $8.
British Journal of Dermatology and Syphilis. H. K. Lewis & Co., Ltd., 136 Gower St., London, W. C. 1. M. 2g.
British Journal of Venereal Diseases. Constable & Co., Ltd., 10 Orange St., Leicester Sq., London, W. C. 2. Q. 20s.

HOSPITAL ADMINISTRATION

Hospital Management. 537 S. Dearborn St., Chicago. M. $2.
Hospital Progress. 1402 S. Grand Blvd., St. Louis. M. $3.
Modern Hospital. 919 N. Michigan Ave., Chicago. M. $3.

INDEX AND DIRECTORY

American Medical Directory. American Medical Association, 535 N. Dearborn St., Chicago. Bi-A. $15. (A register of legally qualified physicians of the United States, Alaska, Canal Zone, Hawaii, Philippine Islands, Puerto Rico, Guam, Samoa and Virgin Islands, Canada, Newfoundland and Yukon. Contains a list of hospitals in the same countries.)
Quarterly Cumulative Index Medicus. American Medical Association, 535 N. Dearborn St., Chicago. Q. $12. (An index and guide to the medical literature of the world.)

INFECTIOUS DISEASES, HYGIENE AND PREVENTIVE MEDICINE

American Journal of Hygiene. Managing Editor, F. M. Root, 615 N. Wolfe St., Baltimore. Bi-M. $12.
American Journal of Public Health and the Nation's Health. American Public Health Association, 450 7th Ave., New York. M. $5.
American Journal of Tropical Medicine. Williams & Wilkins Co., Mt. Royal and Guilford Aves., Baltimore. Bi-M. $5.
Journal of Immunology. Williams & Wilkins Co., Mt. Royal and Guilford Aves., Baltimore. M. $9.
Journal of Industrial Hygiene with Abstract of Literature. Williams & Wilkins Co., Mt. Royal and Guilford Aves., Baltimore. Bi-M. $5.
Journal of Infectious Diseases. 637 S. Wood St., Chicago. Bi-M. $5.

MEDICINE

American Heart Journal. C. V. Mosby Co., 3523 Pine Blvd., St. Louis. Bi-M. $7.50.
American Journal of the Medical Sciences. Lea & Febiger, 600 S. Washington Sq., Philadelphia. M. $6.
Annals of Internal Medicine. American College of Physicians, Prince and Lemon Sts., Lancaster, Pa. M. $7.
Archives of Internal Medicine. American Medical Association, 535 N. Dearborn St., Chicago. M. $5.
British Medical Journal. British Medical Association House, 19 Tavistock Sq., London, W. C. 1. W. $20.
Canadian Medical Association Journal, 3640 University St., Montreal. M. $6.
Clinical Science Incorporating Heart. Shaw & Sons, Ltd., 7, 8 & 9, Fetter Lane, Fleet St., London, E. C. 4. Irreg. 37s. 6d.
Hygeia. 535 N. Dearborn St., Chicago. M. $2.50.
Industrial Medicine. 844 Rush St., Chicago. M. $5.
International Clinics. J. B. Lippincott Co., 227 E. Washington Sq., Philadelphia. Q. $12.
Journal of Allergy. C. V. Mosby Co., 3523 Pine Blvd., St. Louis. Bi-M. $7.50.
Journal of the American Medical Association. 535 N. Dearborn St., Chicago. W. $7.
Journal of Clinical Investigation. 634 Madison Ave., New York. Bi-M. $10.
Journal of Experimental Medicine. Rockefeller Institute for Medical Research, York Ave. and 66th St., New York. M. $10.
Lancet. 7 Adam St., Adelphi, London, W. C. 2; Oxford University Press (American Branch), 114 5th Ave., New York. W. £2 10s.
Medical Clinics of North America. W. B. Saunders Co., W. Washington Sq., Philadelphia. Bi-M. Cloth, $16; paper, $12.
Medicine, Analytical Reviews of General Medicine, Neurology and Pediatrics. Williams and Wilkins Co., Mt. Royal and Guilford Aves., Baltimore. Q. $5.50.
New England Journal of Medicine. 8 The Fenway, Boston, W. $6.
Quarterly Journal of Medicine. Dr. A. G. Gibson, Sec., 27 Banbury Rd., Oxford. Q. 35s.
Review of Gastroenterology. 148 Lafayette St., New York. Q. $2.

NEUROLOGY AND PSYCHIATRY

American Journal of Psychiatry. American Psychiatric Association, 450 7th Ave., New York. Bi-M. $6.
Archives of Neurology and Psychiatry. American Medical Association, 535 N. Dearborn St., Chicago. M. $8.

Brain. A Journal of Neurology. Macmillan & Co., Ltd., St. Martin's St., London, W. C. 2. (American office—60 5th Ave., New York.) Q. 24s.
Journal of Mental Science. J. & A. Churchill, 40, Gloucester Place, Portman Square, London, W. 1. Q. 7s. 6d. per issue.
Journal of Nervous and Mental Disease. Dr. Smith Ely Jelliffe, 64 W. 56th St., New York. M. $10.
Journal of Neurology and Psychopathology. British Medical Association, Tavistock Square, London, W. C. 1. Q. 30s.
Psychoanalytic Quarterly. 372-374 Broadway, Albany, N. Y. Q. $5.

NUTRITION

American Journal of Digestive Diseases and Nutrition. 435-455 Lincoln Bank Tower, Fort Wayne, Ind. M. $5.50.
Journal of Nutrition, Wistar Institute of Anatomy and Biology, 36th St. and Woodland Ave., Philadelphia. M. $10.
Nutrition; Abstracts and Reviews. Imperial Bureau of Animal Nutrition, Reid Library. Rowett Institute, Aberdeen, Scotland. Q. 21s.

OBSTETRICS AND GYNECOLOGY

American Journal of Obstetrics and Gynecology. C. V. Mosby Co., 3523 Pine Blvd., St. Louis. M. $8.50.
Journal of Obstetrics and Gynaecology of the British Empire. Sherratt & Hughes, 34 Cross St., Manchester. Bi-M. £2 15s.
Surgery, Gynecology and Obstetrics. (Listed under Surgery.)

OPHTHALMOLOGY

American Journal of Ophthalmology. Ophthalmic Publishing Co., 508 Metropolitan Bldg., St. Louis. M. $10.
Archives of Ophthalmology. American Medical Association, 535 N. Dearborn St., Chicago. M. $8.
British Journal of Ophthalmology. Geo. E. Pulman & Sons, Ltd., 24 Thayer St., Marylebone, London, W. 1. M. 2g.

ORTHOPEDIC SURGERY

Journal of Bone and Joint Surgery. Boston Medical Library Bldg., 8 The Fenway, Boston. Q. $5.

OTORHINOLARYNGOLOGY

Annals of Otology, Rhinology and Laryngology. Annals Publishing Co., 7200 Wydown Blvd., St. Louis. Q. $6.
Archives of Otolaryngology. American Medical Association, 535 N. Dearborn St., Chicago. M. $6.
Journal of Laryngology and Otology. Headley Brothers, 109 Kingsway, London, W. C. 2. (American agent—G. E. Stechert & Co., 31-33 E. 10th St., New York.) M. 40s.
Laryngoscope. 912 S. Kingshighway, St. Louis. M. $6.

PATHOLOGY AND CLINICAL LABORATORY WORK

American Journal of Clinical Pathology. Williams and Wilkins Co., Mt. Royal and Guilford Aves., Baltimore. Bi-M. $5.
American Journal of Pathology. Dr. F. B. Mallory, 818 Harrison Ave., Boston. Bi-M. $8.
Archives of Pathology. American Medical Association, 535 N. Dearborn St., Chicago. M. $6.
British Journal of Experimental Pathology. H. K. Lewis & Co., Ltd., 136 Gower St., London, W. C. 1. Bi-M. £2.
Journal of Laboratory and Clinical Medicine. C. V. Mosby Co., 3523 Pine Blvd., St. Louis. M. $8.50.
Journal of Pathology and Bacteriology. Oliver & Boyd, Tweeddale Court, High St., Edinburgh. Bi-M. 60s.

PEDIATRICS

American Journal of Diseases of Children. American Medical Association, 535 N. Dearborn St., Chicago. M. $8.
Archives of Disease in Childhood. British Medical Association, Tavistock Square, London, W. C. 1. Bi-M. 25s.
Archives of Pediatrics. E. B. Treat & Co., 45 E. 17th St., New York. M. $6.
British Journal of Children's Diseases. Adlard & Son, 21 Hart St., Bloomsbury Sq., London, W. C. 1. Q. 25s.
Journal of Pediatrics. C. V. Mosby Co., 3523 Pine Blvd., St. Louis. M. $8.50.

PHARMACOLOGY AND THERAPEUTICS

Journal of Pharmacology and Experimental Therapeutics. Williams & Wilkins Co., Mt. Royal and Guilford Aves., Baltimore. M. $15.

PHYSICAL THERAPY

Archives of Physical Therapy, X-Ray, Radium. American Congress of Physical Therapy, 30 N. Michigan Ave., Chicago. M. $5.
British Journal of Physical Medicine. 17, Featherstone Bldg., London, W. C. 1. M. $5.
Physiotherapy Review. American Physiotherapy Association, 719 Barry Ave., Chicago. Bi-M. $2.50.

PHYSIOLOGY AND BIOCHEMISTRY

American Journal of Physiology. American Physiological Society, Managing Editor, Dr. D. R. Hooker, 19 W. Chase St., Baltimore. M. $30.
Journal of Biological Chemistry. Williams & Wilkins Co., Mt. Royal and Guilford Aves., Baltimore. M. $5 per vol. (About 4 vols. yearly.)
Journal of Physiology. Cambridge University Press, Fetter Lane, London, E. C. 4. M. 30s. per vol. (About 4 vols. yearly.)
Physiological Reviews. American Physiological Society, D. R. Hooker, Managing Editor, 19 W. Chase St., Baltimore. Q. $6.

RADIOLOGY

American Journal of Roentgenology and Radium Therapy. Charles C. Thomas, 220 E. Monroe St., Springfield, Ill. M. $10.
British Journal of Radiology. British Institute of Radiology, 32 Welbeck St., London, W. 1. M. £2 2s.
Radiology. Radiological Society of North America, 607 Medical Arts Bldg., Syracuse, N. Y. M. $6.

SURGERY

American Journal of Cancer. Institute of Cancer Research of Columbia University, 654 Madison Ave., New York. M. $9.
American Journal of Surgery. Paul B. Hoeber, Inc., 76 5th Ave., New York. M. $10.
Annals of Surgery. J. B. Lippincott Co., E. Washington Sq., Philadelphia. M. $10.
Archives of Surgery. American Medical Association, 535 N. Dearborn St., Chicago. M. $8.
British Journal of Surgery. John Wright & Sons, Ltd., Bristol. (American agents—William Wood & Co., Mt. Royal and Guilford Aves., Baltimore.) Q. 42s.
Journal of Thoracic Surgery. C. V. Mosby Company, 3523 Pine Blvd., St. Louis. Bi-M. $7.50.
Southern Surgeon. Southern Surgeon Pub. Co., 478 Peachtree St., N. E., Atlanta. Q. $3.
Surgery, Gynecology and Obstetrics with International Abstract of Surgery. Surgical Publishing Co., 54 E. Erie St., Chicago. M. $12.
Surgical Clinics of North America. W. B. Saunders Co., W. Washington Sq., Philadelphia. Bi-M. Cloth, $16; paper, $12.

TUBERCULOSIS

American Review of Tuberculosis. National Tuberculosis Association, 450 7th Ave., New York. M. $8.
British Journal of Tuberculosis. Baillière, Tindall & Cox, 8 Henrietta St., Covent Garden, London, W. C. 2. (American agent—G. E. Stechert & Co., 31-33 E. 10th St., New York.) Q. $2.50.

UROLOGY

Journal of Urology. Williams & Wilkins Co., Mt. Royal and Guilford Aves., Baltimore. M. $8.
Review of Urologic Surgery in "Archives of Surgery." (See Surgery.)

SUGGESTED BOOKS

The accompanying list is not intended to be complete, but it contains the suggestions of physicians outstanding in their respective fields. (The complete names and addresses of the publishers appear at the end of the list of books.)

ANATOMY

Arey, Leslie B.: Developmental Anatomy. Ed. 2. $6.50. Saunders, 1930.
Bailey, Frederick R.: Text-Book of Histology. Ed. 8. $5.50. Wood, 1932.
Bailey, Frederick R., and Miller, A. M.: Textbook of Embryology. Ed. 5. $7. Wood, 1929.
Callander, C. Latimer: Surgical Anatomy. $12.50. Saunders, 1933.
Cunningham, Daniel J.: Text-Book of Anatomy. Ed. 6, ed. by Arthur Robinson. Oxford, 1930.
Davis, Gwilym G.: Applied Anatomy. Ed. 8. $9. Lippincott, 1929.
Dodds, Gideon S.: Essentials of Human Embryology. $4. Wiley, 1929.
Gray, Henry: Anatomy of the Human Body. Ed. 22, rev. and re-ed. by Warren H. Lewis. $10. Lea, 1930.
Massie, Grant: Surgical Anatomy. Ed. 2. $6. Lea, 1933.
Morris, Sir Henry (ed.): Human Anatomy. Ed. 9. $10. Blakiston, 1933.
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Edward Arnold & Co., 41-43 Maddox St., London, W. 1. (American agent—Longmans, Green & Co., 114 5th Ave., New York.)
P. Blakiston's Son & Co., 1012 Walnut St., Philadelphia.
Cassell & Co., Ltd., La Belle Sauvage, Ludgate Hill, London, E. C. 4.
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Chemical Catalog Co., Inc., 330 W. 42d St., New York.
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Chicago Medical Book Co., 435 S. Honore St., Chicago.
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Thomas Nelson & Sons, 381-385 4th Ave., New York.
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John Wiley & Sons, Inc., 440 4th Ave., New York.
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Book Notices

A Diabetic Manual for the Mutual Use of Doctor and Patient. By Elliott P. Joslin, M.D., Clinical Professor of Medicine, Harvard Medical School. Fifth edition. Cloth. Price, $2. Pp. 224, with 50 illustrations. Philadelphia: Lea & Febiger, 1934.

This edition of Joslin's diabetic manual for the mutual use of doctor and patient is thoroughly revised and constitutes a valuable form of this standard textbook. It is packed full of useful information, encouragement for the patient with diabetes, and warnings against carelessness. It is a complete answer to the doubts and fears of wavering diabetic patients who grow tired of diet and insulin and are tempted to follow the will o' the wisps of quackery to their own speedy destruction. Joslin characterizes the diabetic patient as "his own nurse, doctor's assistant and chemist" but immediately warns that "if he tries to be his own doctor he will come to grief." Of particular interest is the incontrovertible evidence Dr. Joslin presents that diabetes has become more and more a disease of old age. The death rate is decreasing among all the age groups except those past 50. Especially hopeful is the outlook for diabetic children; this, of course, is in sharp contrast to the situation before insulin was introduced in 1922. The author is uncompromising in his statements that a properly advised patient can control his diabetes. He designates the following ingredients as essential in the treatment of diabetes: medical supervision, cooperation of the patient, diet, exercise, insulin, brains and character. Even persons who do not have diabetes would make no mistake in reading this book, because of the emphasis on prevention of diabetes through weight control, avoidance of marriage among individuals with diabetic family histories, and general supervision of the dietary.

Intercortical Systems of the Human Cerebrum Mapped by Means of New Anatomic Methods. By Joshua Rosett, Assistant Professor of Neurology, Columbia University. Cloth. Price, $3. Pp. 135, with 41 illustrations. New York: Columbia University Press, 1933.

The fibers in the white center of the cerebrum are arranged in parallel rows to form flat bands and sometimes lamellae of paper-like thinness. In many places these lamellae lie one on another and can be dissected away one at a time like the layers of an onion. This is particularly true of the association fibers joining different parts of the cerebral cortex. These lamellae and the arrangement of their constituent fibers have been studied in detail by Rosett. For this investigation he used a new method, charging the brain with carbon dioxide under pressure of about 1,000 pounds and then allowing it to explode, thus rendering conspicuous the planes of cleavage between the lamellae. Since the pictures thus obtained are quite fragmentary and the observations that Rosett has made have not been combined into a comprehensive account of the association pathways of the cerebral hemisphere, the book will be of interest chiefly to those who are concerned with the minutiae of the intercortical fiber systems.

Allen's Commercial Organic Analysis: A Treatise on the Properties, Modes of Analysis, and Proximate Analytical Examination of the Various Organic Chemicals and Products Employed in the Arts, Manufactures, Medicine, Etc. With Concise Methods for the Detection and Estimation of Their Impurities, Adulterations, and Products of Decomposition. Volume X: Haemoglobin and Its Derivatives, Albuminoids or Scleroproteins, Structural Proteins, Examination of Foodstuffs for Vitamins, The Hormones, The Identification of Unknown Woods and Charcoals, The Pectic Substances. Edited by C. Ainsworth Mitchell, M.A., D.Sc., F.I.C., Consulting Chemist, London. (General Reference Index by M. B. Elliott.) Fifth edition. Cloth. Price, $7.50 per volume. Pp. 817, with illustrations. Philadelphia: P. Blakiston's Son & Company, Inc., 1933.

This volume, the tenth of this important series, completes the fifth edition. It contains monographs by various writers on hemoglobin and its derivatives, albuminoids, structural proteins, vitamins, hormones, identification of woods and charcoals, and pectic substances. These maintain the standard of the earlier contributions to this work. A general index to the whole ten volumes completes the book. The section on hemoglobin by Gardner and Buckmaster contains much valuable information but does not attain the completeness expected in a reference series of this sort. It is surprising to find that the only devices described for estimating erythrocytes are the antiquated Gower and Thoma-Zeiss hemacytometers; that diameters of blood cells are given in some tables in fractions

of an inch without the equivalent metric dimensions; that blood grouping is stated only according to the classification of Moss (although it is not here attributed to Moss and no mention is made of the widely used Jansky method or of the Landsteiner classification, which is supplanting both); that the Van Slyke method for hemoglobin is not mentioned. The monograph by Jerome Alexander on albuminoids is unusually complete; that on structural proteins by R. H. Marriott includes much valuable material. The succeeding section on vitamins, by Drummond and Coward, contains adequate data for assay, together with an appendix on the international standards, but, as admitted by the authors, it is unfortunately not up to date. The hormones are considered by Culhane and Underhill; their work is useful for reference, but several of the important newer methods and tests are not included. Although, for instance, the Allen-Doisy method for assay of estrogenic substance is discussed, one looks in vain for the Aschheim-Zondek pregnancy test; the methods of making suprarenal-cortical extracts proposed by Swingle and by Hartman are described, but the earlier and more satisfactory method of Rogoff is not given. The volume is completed by valuable sections on woods by J. Cecil Maby and on pectic substances by H. W. Buston.

Pediatric Nursing Including the Nursing Care of the Well Infant and Child. By Gladys Sellew, M.A., B.S., R.N., Director Nursing Education, Chicago City Infant Hospital Affiliated with De Paul University. Third edition. Cloth. Price, $2.50. Pp. 609, with 53 illustrations. Philadelphia & London: W. B. Saunders Company, 1934.

This edition explains and applies the newer developments in pediatrics and pediatric nursing. The changes in the section on communicable diseases are especially emphasized. There is a new section detailing the organization and special nursing procedures required in the Children's Clinic. Each chapter is now concluded with a series of questions for quiz work. This textbook is designed especially to help the student nurse to understand both well and sick children. Portions are devoted to practical considerations in caring for the normal child from birth on, and then sections to pediatric nursing; i. e., nursing procedures involved in routine ward work, procedures connected with the admission of the child to the hospital, and other procedures. Following these, the medical aspects of children's diseases are presented with detailed directions on the nursing care of every pediatric condition, including orthopedic nursing. Emphasis is placed on mental hygiene and development. A list of books for children of various ages on various subjects is appended. It is logical that a nurse is not qualified to discuss the medical aspects of diseases and infant feeding without the assistance of a physician. Realizing this, Miss Sellew has had many of the portions of the book dealing with the description of diseases and infant feeding written by a qualified physician. It is a highly satisfactory book on pediatric nursing.

New Introductory Lectures on Psycho-Analysis. By Sigmund Freud, M.D., LL.D. Translated by W. J. H. Sprott. Cloth. Price, $3. Pp. 257. New York: W. W. Norton & Company, Inc., 1933.

Freud's first series of introductory lectures appeared in 1916. The present volume is a new work, constituting a series of lectures published in Vienna in 1933. The seven lectures cover a revision of the theory of dreams, dreams and the occult, the anatomy of the mental personality, anxiety and instinctual life, the psychology of women, orientations and a philosophy of life.

The chapter on the psychology of women presents the point of view that woman is a passive element, that her aggressiveness is constantly repressed and that the riddle of femininity will not be solved until there can be understanding of the differentiation of living creatures into two sexes. The author makes much of the point of view that the girl and woman constantly seeks development of those organs and tissues that will give her the position of the male.

Most interesting of all is, of course, the philosophy of life of a man who has devoted all his life to a better understanding of others. The author says: "At a time when great nations are declaring that they expect to find their salvation solely from a steadfast adherence to Christian piety, the upheaval in Russia—in spite of all its distressing features—seems to bring a promise of a better future. Unfortunately, neither our own misgivings nor the fanatical belief of the other side give us any hint of how the experiment will turn out. The future will teach us. Perhaps it will show that the attempt has been made prematurely and that a fundamental alteration of the social order will have little hope of success until new discoveries are made that will increase our control over the forces of nature, and so make easier the satisfaction of our needs. It may be that only then will it be possible for a new order of society to emerge which will not only banish the material want of the masses but at the same time meet the cultural requirements of individual men. But even so we shall still have to struggle for an indefinite length of time with the difficulties which the intractable nature of man puts in the way of every kind of social community."

Thomas Young, F.R.S.: Philosopher and Physician. By Frank Oldham, M.A., B.Sc., A. Inst. P. Cloth. Price, $2.40. Pp. 159, with 16 illustrations. New York: Longmans, Green & Company; London: Edward Arnold & Company, 1933.

An infant prodigy, born in England in 1773 of Quaker parentage, Thomas Young became an interesting contributor to many branches of medical science. He could read at the age of 2 and knew the "Deserted Village" by heart before he was 6. He burned with a thirst for learning and equipped himself to participate in the advancement of many branches of science. After a medical education in London and in Edinburgh he extended his studies in Germany, and there are numerous quotations from his writings depicting the young man's appreciation of life and learning in these places. In order to receive a medical degree he returned to Cambridge and took two years there, graduating in 1797. After his graduation he inherited a fortune of £10,000, so that he was able to devote himself to medical practice, but perhaps by the very reason of his fortune he failed to develop a good bedside manner and thereby made little success as a popular physician. His fame in medicine rests on his work as a compiler, historian and publicist. He wrote an introduction to medical literature and an essay on consumptive diseases. He was, however, particularly interested in natural philosophy. His contributions in medicine include studies of sound and light, the establishment of the undulatory theory of light, studies of the mechanisms of the eye and of capillarity, and finally researches in Egyptian hieroglyphics. His translation of the second portion of the Rosetta stone was a notable performance. It is said of him that he was the first to grasp the idea of a phonetic principle in reading Egyptian hieroglyphics.

Children of Preschool Age: Studies in Socio-Economic Status, Social Adjustment and Mental Ability, with Illustrative Cases. By Ethel Kawin, Research Psychologist, Behavior Research Fund and Institute for Juvenile Research. Cloth. Price, $3.50. Pp. 340, with illustrations. Chicago: University of Chicago Press, 1934.

The exact value of this book is difficult to determine. It is a report of some of the work of the preschool department of the Illinois Institute for Juvenile Research. Only a few conclusions are presented. The mass of the material is taken up with case presentation, which at times is dull, lengthy and accompanied by extraneous statements. Probably the most important conclusion that could be found in the book is that the constancy of the Merrill-Palmer scale remains an open question and that possibly the scale will be found more reliable on extensive study than it appears to be from the data in this study. Other conclusions are drawn, such as that there are a group of factors which appear to be related to the child's social adjustment, a conclusion that does not need substantiation by a large mass of research. If the book should be greatly shortened, its value might be increased.

Heredity and the Social Problem Group. By E. J. Lidbetter. Volume I. Cloth. Price, $7.50. Pp. 160, with illustrations. London: Edward Arnold & Company; New York: Longmans' Green & Co., 1933.

This volume includes essentially a series of family charts and pedigrees for families in which mental defect is apparently associated with poverty and the fact that the family becomes a charge on the community. Each of the pedigrees is supplemented by a brief analysis. The charts bring out the striking fact that families in which mental defects appear tend to intermarry. The exhibit is an impressive demonstration of the necessity for some sort of social control in order to prevent undue propagation of the unfit.

Contagious Diseases: What They Are and How to Deal with Them. By W. W. Bauer, B.S., M.D., Director, Bureau of Health and Public Instruction, American Medical Association. Cloth. Price, $2. Pp. 218. New York: Alfred A. Knopf, 1934.

In this volume Dr. W. W. Bauer, director of the Bureau of Health and Public Instruction of the American Medical Association, has assembled a series of articles, on the infectious diseases, many of them printed in *Hygeia*. The essential facts for every family that wants to be well informed are here provided in easily readable form. The material is up to date and intensely practical. Physicians may recommend this book without question to any family interested in the facts regarding the conditions commonly appearing among children. It has long since been recognized that intelligent lay cooperation with the medical profession is desirable for better control of infectious diseases. The purpose of this little book is to improve such cooperation.

A Text-Book of Physiology for Medical Students and Physicians. By William H. Howell, Ph.D., M.D., Sc.D. Twelfth edition. Cloth. Price, $7. Pp. 1132, with 308 illustrations. Philadelphia & London: W. B. Saunders Company, 1933.

Because of the advance in our knowledge of the vitamins, the hormones and the chemistry of muscle contraction, the twelfth edition of this standard textbook of physiology, first introduced in 1905, has been revised, reprinted and recopyrighted. The author has brought his book quite up to date and has presented a number of historical introductions to the discussions of some of the topics in order to give the student a proper perspective on the manner in which science advances. This textbook is one of the most widely used by American teachers of physiology.

The Great Doctors: A Biographical History of Medicine. By Dr. Henry E. Sigerist, Professor of the History of Medicine, the Johns Hopkins University. Translated by Eden and Cedar Paul. Cloth. Price, $4. Pp. 436, with illustrations. New York: W. W. Norton & Company, Inc., 1933.

This volume, translated from the German, offers a biographic approach to the history of medicine. It includes biographies of from eight to twenty pages each of epoch makers from the time of Hippocrates to that of William Osler. The literary style of Dr. Sigerist, his philosophical approach to his subject and his comprehensive grasp of medical affairs make the book of interest not only to the physician but also to the general reader. It is interesting to find in Dr. Sigerist's sketch of William Osler his personal appreciation of Osler's humanism and Osler's deprecation of a fixed program for medicine.

A Text-Book of Medicine. By American Authors. Edited by Russell L. Cecil, A.B., M.D., Sc.D., Professor of Clinical Medicine, Cornell University Medical College. Associate Editor for Diseases of the Nervous System, Foster Kennedy, M.D., F.R.S.E., Professor of Neurology, Cornell University Medical College. Third edition. Cloth. Price, $9. Pp. 1664, with 30 illustrations. Philadelphia & London: W. B. Saunders Company, 1933.

Here is a one volume system of medicine in its third edition, the last one having appeared some three years ago. In that period of time, as is pointed out in the preface, there have been additions to our knowledge, particularly in the field of infectious diseases and of endocrinology. New articles have been added on many of the rarer infectious diseases, and some of the older articles have been rewritten by new contributors. Because of the numerous changes, the publishers have reset the entire work, which incidentally shows the effects of repeated competent revision. The volume is one of the best available to the practitioner who wishes a succinct textbook of the practice of medicine.

Le poison des amanites mortelles. Par R. Dujarric de la Rivière. Paper. Price, 60 francs. Pp. 182, with 24 illustrations. Paris: Masson & Cie, 1933.

This monograph, on the most important group of poisonous mushrooms, the deadly Amanitas, is clearly written and well illustrated. There is a bibliography of twenty-eight pages and also a list of pertinent articles and brief notes appearing in the *Bulletin de la société mycologique de France* from 1885 to 1931. The index is quite inadequate. The monograph discusses the botanic classification of the Amanitas, the chemistry and physiologic action of the poison, the gross and histologic lesions caused in man and laboratory animals, serotherapy, medicolegal considerations and prophylaxis. The author's own researches are included, and the book is a real addition to the literature of mushroom poisoning. It is too bad that French writers and publishers do not pay more attention to the correct transcribing of quotations in English, English and American proper names and the titles of English and American periodicals.

Giants and Dwarfs: A Study of the Asterior Lobe of the Hypophysis. By Palmer Howard Futcher. Boards. Price, $1.25. Pp. 80, with 3 illustrations. Cambridge, Mass.: Harvard University Press, 1933.

This is an honors thesis in science of the class of 1932 at Harvard. It constitutes an adequate survey of our knowledge of the relationship of the pituitary gland to disturbances of growth. The book is nicely written and handsomely published.

Health Facts for College Students: A Text-Book of Individual and Community Health. By Maude Lee Etheredge, M.D., Dr.P.H., Professor of Hygiene and Medical Advisor for Women, University of Illinois. With a foreword by Ray Lyman Wilbur, M.D. Cloth. Price, $2. Pp. 342, with 61 illustrations. Philadelphia & London: W. B. Saunders Company, 1933.

This book consists of the material formerly used in mimeographed form for the classes of women students at the University of Illinois. It is essentially a compilation in rather popular form of the well established facts of personal hygiene. The volume is a reliable guide to the minimum of knowledge that every college graduate ought to have on the care of the health and the leading of a hygienic life.

Voluntary Motherhood: A Discussion of the Various Contraceptive Methods, with Emphasis on Generally Approved Techniques. By Antoinette F. Konikow, M.D. Fourth edition. Paper. Price, 50 cents. Pp. 36, with 8 illustrations. Boston: Buchholz Publishing Company, 1933.

This pamphlet, now in its fourth edition, promotes the use of the intravaginal rubber pessary associated with antiseptic pastes and douches as the ideal method for widespread birth control. There are, however, innumerable physicians who are convinced that this method, strongly supported by the Margaret Sanger group, is unsatisfactory from the esthetic point of view as well as from the medical point of view.

Industrial Health Service. By Leverett Dale Bristol, M.D., Dr.P.H., Health Director, American Telephone and Telegraph Company, New York, New York. Cloth. Price, $2. Pp. 170. Philadelphia: Lea & Febiger, 1933.

The author is health director of the American Telephone and Telegraph Company. He divides his book into sections depending on the use of the health service from the point of view of the management, the supervisor and the worker. It is an exceedingly practical manual but so condensed as to offer little of importance to the experienced worker in this field.

Some Modern Extensions of Beaumont's Studies on Alexis St. Martin. By W. B. Cannon, M.D., S.D., LL.D., George Higginson Professor of Physiology, Harvard Medical School. Beaumont Foundation Lectures, Twelfth Series. Reprinted from the Journal of the Michigan State Medical Society, March-May, 1933. Cloth. Pp. 87. Detroit: Lectureship Foundation Committee, Wayne County Medical Society, 1933.

This is a reprint from the *Journal of the Michigan State Medical Society* of a series of lectures given by Dr. W. B. Cannon to commemorate the one-hundredth anniversary of the publication of Beaumont's essay on digestion. These lectures deal with thirst and hunger, the important relation of digestion and health, and digestive disturbances produced by pain and emotional excitement.

Lectures on the History of Medicine: A Series of Lectures at the Mayo Foundation and the Universities of Minnesota, Wisconsin, Iowa, Northwestern, and the Des Moines Academy of Medicine, 1926-1932. Cloth. Price, $5. Pp. 516, with 26 illustrations. Philadelphia & London: W. B. Saunders Company, 1933.

The essays herein contained were given from 1926 to 1932 through a cooperative arrangement between the Mayo Foundation and a number of midwestern universities. The collection embraces contributions by many leading medical historians as well as some by practitioners with whom the history of medicine has been a hobby. All the essays will be appreciated by those interested in medical history. They reveal, as is invariably the case, an unevenness of literary quality and an unevenness of approach. Some of the essays represent condensations of longer works by the authors on the same subject. Of special

interest are the four contributions by Fielding H. Garrison, the essay on the first American medical journals and Dr. Willard Bartlett's sketch of the life and time of Virchow, a figure whose contribution to the advancement of medicine is almost always underestimated.

Medicolegal

Narcotics: Sale of Cigarets by Dealers in Narcotics Prohibited.—The city of Reno passed an ordinance prohibiting the sale of cigarets in any place of business where narcotic or poisonous drugs are kept for sale. A preamble to the ordinance set forth that cigarets containing narcotic and poisonous drugs were being sold in Reno and that the handling of cigarets in places where such drugs are dispensed makes readily possible the addition of them to cigarets and thereby endangers the health, comfort, safety, life and welfare of the inhabitants of the city. Nash, the manager of a drug store, was charged in the justice's court in Reno with a violation of the ordinance. He was arrested and thereupon filed in the Supreme Court of Nevada a petition for a writ of habeas corpus, contending that the ordinance was unconstitutional. That a city ordinance or police regulation, said the Supreme Court, forbids acts theretofore innocent and lawful affords no ground for holding such legislation either void or unreasonable. The foundation for this ordinance was the sale and distribution in Reno of cigarets containing narcotic and poisonous drugs. Assuming this to be a fact, reasonable legislation to suppress such a publicly notorious evil cannot be overthrown on the ground that it is arbitrary and capricious. The constitution does not limit the exercise of the police power to suppress and prevent the use of cigarets or any article of trade as agencies to facilitate the sale and use of dangerous and habit-forming drugs.

The court could find no principle in the federal or state constitution violated by the enactment of the ordinance. It therefore ordered the writ of habeas corpus discharged and Nash remanded to the custody of the chief of police of the city of Reno.—*Ex parte Nash (Nev.), 26 P. (2d) 353.*

Workmen's Compensation Acts: Aggravation of Injury by Malpractice of Employer's Physician and Nurses Compensable.—A particle of concrete became embedded in an employee's eye in the course of his employment. The employer's physician and nurses treated him in first aid rooms maintained by the employer, but he lost his eye. Instead of claiming compensation under the workmen's compensation act, he brought an action at law against his employer. He contended that the loss of his eye was due to malpractice by the physician and nurses who treated him and that there was no causal relation between the industrial accident and the loss of his eye. Therefore, he argued, the injury from which he suffered was an independent injury for which he was entitled to recover damages in an action at law. The supreme court of New Jersey allowed the case to go to the jury on the theory that the injury, due to malpractice, was independent of the original injury, which arose out of and in the course of employment. Judgment was given in favor of the employee. The employer appealed to the Court of Errors and Appeals of New Jersey.

The employee, in the opinion of the Court of Errors and Appeals, could not recover damages from his employer in an action at law, even though the injury complained of did not arise out of and in the course of his employment and did not come within the purview of the workmen's compensation act. An employer is liable at common law, for the malpractice of a physician or nurse employed by him to treat or care for his employee, only if he has not used reasonable care in selecting that physician or nurse. In the present case nothing in the record shows that the defendant-employer was negligent in that respect.

But, in the opinion of the court, the injury complained of did arise out of and in the course of the plaintiff's employment, and therefore the workmen's compensation act furnished the only remedy. If a physician furnished by an employer is guilty of malpractice in treating an industrial injury, under the workmen's compensation act the employer is liable; for there is a causal relation between the employment, the industrial accident and the injury. In the present case, without the employment there would have been no accident; without the accident there would have been no treatment of the plaintiff's eye by the defendant's physician and nurses; without such treatment the eye would not have been lost.

The court held therefore that the plaintiff-employee should have proceeded under the workmen's compensation act and not at law, and entered judgment in favor of the employer.—*Tutino v. Ford Motor Co. (N. J.), 168 A. 749.*

Society Proceedings

COMING MEETINGS

American Medical Association, Cleveland, June 11-15. Dr. Olin West, 535 North Dearborn Street, Chicago, Secretary.

American Academy of Pediatrics, Cleveland, June 11-12. Dr. Clifford G. Grulee, 636 Church Street, Evanston, Ill., Secretary.

American Association for the Study of Goiter, Cleveland, June 7-9. Dr. J. R. Yung, 670 Cherry Street, Terre Haute, Ind., Secretary.

American Association for the Study of Neoplastic Diseases, Baltimore, June 21-23. Dr. Eugene R. Whitmore, 2139 Wyoming Avenue, N.W., Washington, D. C., Secretary.

American Association of Industrial Physicians and Surgeons, Cleveland, June 11-12. Dr. Volney S. Cheney, Armour and Company, Union Stock Yards, Chicago, Secretary.

American Association of Medical Milk Commissions, Cleveland, June 11-12. Dr. Harris Moak, 360 Park Place, Brooklyn, Secretary.

American Association on Mental Deficiency, New York, May 26-29. Dr. Groves B. Smith, Beverly Farms, Godfrey, Ill., Secretary.

American Bronchoscopic Society, Cleveland, June 11. Dr. Louis H. Clerf, 110 South 10th Street, Philadelphia, Acting Secretary.

American Dermatological Association, New York, June 7-9. Dr. William H. Guy, 500 Penn Avenue, Pittsburgh, Secretary.

American Heart Association, Cleveland, June 12. Dr. Irl C. Riggin, 50 West 50th Street, New York, Executive Secretary.

American Laryngological Association, Cleveland, June 7-9. Dr. William V. Mullin, 9204 Euclid Avenue, Cleveland, Secretary.

American Neurological Association, Atlantic City, June 4-6. Dr. Henry Alsop Riley, 117 East 72d Street, New York, Secretary.

American Ophthalmological Society, Lucerne-in-Quebec, Canada, July 9-11. Dr. J. Milton Griscom, 2213 Walnut Street, Philadelphia, Secretary.

American Orthopedic Association, Rochester, Minn., June 6-9. Dr. Ralph K. Ghormley, Mayo Clinic, Rochester, Minn., Secretary.

American Physiotherapy Association, Cleveland, June 13-16. Mrs. Bess Searls, 1430 West 77th Place, Chicago, Secretary.

American Proctologic Society, Cleveland, June 11-12. Dr. Frank G. Runyeon, 1361 Perkiomen Avenue, Reading, Pa., Secretary.

American Psychiatric Association, New York, May 28-June 2. Dr. William C. Sandy, State Education Building, Harrisburg, Pa., Secretary.

American Society of Clinical Pathologists, Cleveland, June 8-11. Dr. A. S. Giordano, 531 North Main Street, South Bend, Ind., Secretary.

American Surgical Association, Toronto, Canada, June 4-6. Dr. Vernon C. David, 59 East Madison Street, Chicago, Secretary.

American Therapeutic Society, Cleveland, June 8-9. Dr. Oscar B. Hunter, 1835 Eye Street, N.W., Washington, D. C., Secretary.

Arizona State Medical Association, Prescott, June 7-9. Dr. D. F. Harbridge, 822 Professional Building, Phoenix, Secretary.

Association for the Study of Allergy, Cleveland, June 11-12. Dr. Warren T. Vaughan, 808 Professional Building, Richmond, Va., Secretary.

Association for the Study of Internal Secretions, Cleveland, June 11-12. Dr. F. M. Pottenger, Pottenger Sanatorium, Monrovia, Calif., Secretary.

Conference of State and Provincial Health Authorities of North America, Washington, D. C., June 5-6. Mr. A. J. Chesley, Minnesota State Office Building, St. Paul, Secretary.

Maine Medical Association, Bangor, May 28-29. Miss Rebekah Gardner, 22 Arsenal Street, Portland, Secretary.

Massachusetts Medical Society, Worcester, June 4-6. Dr. Walter L. Burrage, 182 Walnut Street, Brookline, Secretary.

Medical Women's National Association, Cleveland, June 10-12. Dr. Elizabeth Kittredge, 3906 McKinley Street, Washington, D. C., Secretary.

Minnesota State Medical Association, Duluth, July 16-18. Dr. E. A. Meyerding, 11 West Summit Avenue, St. Paul, Secretary.

Montana, Medical Association of, Helena, July 11-12. Dr. E. G. Balsam, Box 88, Billings, Secretary.

New Jersey, Medical Society of, Atlantic City, June 5-8. Dr. J. B. Morrison, 66 Milford Avenue, Newark, Secretary.

New Mexico Medical Society, Las Vegas, July 19-21. Dr. L. B. Cohenour, 219 West Central Avenue, Albuquerque, Secretary.

North Dakota State Medical Association, Fargo, May 28-29. Dr. Albert W. Skelsey, 20½ Broadway, Fargo, Secretary.

North Pacific Pediatric Society, Vancouver, B. C., June 18. Dr. R. H. Somers, 1305 Fourth Avenue, Seattle, Secretary.

Pacific Coast Oto-Ophthalmological Society, Butte, Mont., July 16-18. Dr. F. C. Cordes, Fitzhugh Building, San Francisco, Secretary.

Pacific Northwest Medical Association, Salt Lake City, June 21-23. Dr. C. W. Countryman, 407 Riverside Avenue, Spokane, Wash., Secretary.

Rhode Island Medical Society, Providence, June 7. Dr. J. W. Leech, 167 Angell Street, Providence, Secretary.

Utah State Medical Association, Salt Lake City, June 21-23. Dr. Leland R. Cowan, 305 Medical Arts Building, Salt Lake City, Secretary.

Wyoming State Medical Society, Casper, July 16-17. Dr. Earl Whedon, 50 North Main Street, Sheridan, Secretary.

SOCIETY FOR THE PREVENTION OF ASPHYXIAL DEATH

Second Annual Conference, held in New York, Feb. 19-20, 1934

The President, PALUEL J. FLAGG, M.D., New York, in the Chair

How Antiquity and Medieval Europe Looked upon the Problems of Asphyxiation

DR. JAMES J. WALSH, New York: Hippocrates suggested that in inflammatory croup with difficulty of respiration a cannula should be carried into the throat so that the air could be drawn into the lungs past the obstruction. The use of the cannula or tube for the relief of asphyxiation is next heard of among a group of French surgeons during the first quarter of the nineteenth century. Early in the century Desault succeeded in placing a tube in the larynx apparently, restoring respiration and lengthening patients' lives. About 1820, Patissier, another French surgeon, suggested that some such mechanical procedure should be employed for edema of the glottis.

In spite of this interest in the procedure for intubation the practice died out, and it seemed to be a closed chapter in medicine and surgery. Here in New York, Dr. Joseph O'Dwyer as attending physician to the Foundling Asylum had to witness a number of deaths from asphyxiation. He resolved to relieve these cases by mechanical means. It required a great deal of experiment to determine what sort of tube could be inserted without much difficulty and would be retained, but O'Dwyer gradually worked it out and proceeded to save a great many lives among the children and nurses at the Foundling Asylum.

O'Dwyer then read a paper before the New York Academy of Medicine in which he described his success with intubation. The pediatricians told him that intubation had been tried by the Greeks and given up and then had been studied by the French, who found it of no value. O'Dwyer took these specialists to the Foundling Asylum to show them what he was doing there. No doubt of his success was left in their minds.

Dr. Trousseau, the distinguished French clinician about the middle of the nineteenth centry, reintroduced tracheotomy and in many cases of blocking of the rima glottidis this procedure afforded relief; but in diphtheria very few recovered. O'Dwyer said that he had been aroused to experimentation in this direction by the complete failure of tracheotomy for some ten years at the New York Foundling Asylum. As regards the early operations for tracheotomy, Colonel Garrison, whom I consulted, suggests that there is the probability that prehistoric man may have slit open the gullet of a person suffocating from croup or diphtheria. The first successful case of tracheotomy in modern times, is the operation performed during the course of diphtheria by Bretonneau on Elizabeth de Puysegur, July 1, 1825. After five failures he succeeded in opening the trachea and affording relief. Trousseau was the first Parisian clinician to perform tracheotomy for diphtheria and his operation was done on Gustave de Marcillet, Nov. 23, 1831.

Dr. Joseph O'Dwyer—Pioneer in the Prevention of Asphyxial Death

DR. HENRY HALL FORBES, New York: Joseph O'Dwyer, the inventor of the O'Dwyer intubation tube and later of an instrument for artificial respiration, was my teacher. I served under him as an intern at the New York Foundling Hospital in 1892-1893, while he was perfecting his intubation tubes for the relief of children suffocating from laryngeal diphtheria. Dr. O'Dwyer had in mind also the invention of an instrument to use in cases of asphyxia from other causes. The instrument was inserted into the larynx and held there. The rubber tube went to a foot pump on the floor. With the thumb covering the opening, and with gentle pressure the respiratory rate was maintained at the rate of from 18 to 20 movements to the minute.

Dr. O'Dwyer had quite a general practice in addition to his specialty in children. He was a native American and his early training was in the office of a physician. In 1866 he was graduated from the College of Physicians and Surgeons. After graduation he served on the staff of the Charity Hospital. He passed through two epidemics of cholera, which he contracted twice. In 1872 he was appointed to the staff of the New York Foundling Hospital. In those days a diphtheria epidemic there would have a mortality rate of from 40 to 50 per cent. I used to go over to the contagious building at the Foundling Hospital and see children grasping the sides of the crib, breathing that way, blue and suffering. After a tube had been inserted they would lie down and go to sleep. How many lives were saved is uncertain. In 1887 Dr. O'Dwyer appeared in the autopsy room with a new tube adopted to fit the larynx and not easily coughed out. A search through the records of the New York Foundling Hospital reveals that Dr. O'Dwyer first applied his "spring tube" in relieving severe dyspnea of a child suffering from diphtheria, Oct. 24, 1882. April 23, 1884, he first applied the "oval tube" in a baby of 3 months suffering from dyspnea caused by diphtheritic laryngitis. Dr. O'Dwyer's first public presentation of his method appeared in the *New York Medical Journal* in 1885 under the title "Intubation of the Larynx." In 1892 before the American Pediatric Society he gave a talk on an improved method for performing artificial respiration. He refused to take much of the credit and described his apparatus as a modification of the method devised by Dr. George E. Fell of Buffalo. In 1894 he was invited to talk before the British Medical Society. He urged Dr. Northrup to make the trip and in three days Dr. Northrup was on the high seas. The paper presented at that gathering was published in the *British Medical Journal* for that year.

For years Dr. O'Dwyer was lecturing on intubation and allied problems at the Bellevue Hospital Medical College and at the Post-Graduate Hospital, yet he found time to take the presidency of the American Pediatric Society. He died, Jan. 7, 1898, of a brain condition at his home in New York, aged 57.

Differential Pressures in Resuscitation and Thoracic Surgery

DR. POL N. CORYLLOS, New York: Anoxemia and acapnia are the two causes of asphyxial death. The importance of carbon dioxide should not be underestimated. No rational treatment of anoxemia can be carried on without an exact knowledge of the significance of carbon dioxide in respiration. In the diagnosis of asphyxia the presence of cyanosis is not compulsory. On the contrary, the most dangerous forms of anoxemia are accompanied by excessive elimination of carbon dioxide and consequently by absence of cyanosis. In these cases death occurs without any conspicuous symptoms. In thoracic surgery, the anesthetist is one of the most important members of the surgical group. The treatment of respiratory disturbances must be carried out by specially trained men. It is hoped that this work will be carried on in the future by the anesthetist, who, more than any one else, is prepared for this task.

(The author showed a film representing the experimental production of atelectasis and measurement of gas changes behind the obstructed bronchus in the alveoli in an experiment carried on in the Cornell Medical College Surgical Research Laboratory in connection with Dr. Birnbaum.)

The Problem of Electric Shock

DR. HORATIO B. WILLIAMS, New York: The first large industrial application of electricity was in the lighting of cities with carbon arc lamps, which took about 45 volts apiece. About 1880, I think, Edison introduced the carbon filament incandescent lamp, which was originally operated on 110 volts direct current. Later came the introduction of extended power circuits. It is impossible to transmit 110 volts direct current economically over any great distance. But alternating current can be transmitted at high tension. With the coming of the alternating current and high tension up to maybe 100,000 volts, when people got across those high voltages not only was the skin burned but sometimes the body was practically incinerated. The bones may be melted. It isn't an asphyxial death when the current kills by heating effects. If there is a good contact from the head to the feet, enough heat may be generated in the head to throw the eyes out of the sockets.

There is another type of death by electricity. In the last fifteen years there have been reports about people who seem to die from touching low voltage alternating current circuits. At first nobody believed it. The whole thing is simple. For a 110 volt circuit to kill it is necessary that the skin be suffi-

ciently moist, that the contact be sufficiently large, and that the current pass through the chest in sufficient quantity to throw the ventricles into fibrillation. Not every case of ventricular fibrillation continues to death, but the usual outcome is death. In case of electric shock, artificial respiration will often maintain a sufficient circulation to keep the cellular elements of the central nervous system alive.

Alternating current, which is much more dangerous than direct current, is almost universal now. Numerous deaths from low voltage electric shock have occurred when people are in the act of taking baths. A typical accident happened on a day when there was a thunderstorm. It got dark. When a man got ready to dry himself after bathing, he reached to pull the chain. The wire in contact with the outside of the fixture was the wire that didn't connect to the ground, the other wire being connected with the ground. Standing in the bathtub, he made a connection with his wet hands from the outside of the fixture down to his body and got enough shock to the heart to start fibrillation. Artificial respiration is the treatment. It should be long continued. One never can tell how late it may be possible to resuscitate the patient. Another way to get hurt is in a laundry. Electric washing machines ought to be safe. They are when they come from the manufacturer. In the laundry the floor may be wet. The operator gets his hands in the water and gets them good and wet. The contact is on the live side and the damage is done.

All this suggests that designers should have their attention drawn to the necessity of taking particular care of appliances that are used in kitchens, laundries, laboratories, bathrooms, chemical factories, damp cellars, places where people sweat and where the body gets wet, and that the public should know there may be danger. In domestic establishments, if grounding of either side of the circuit could be avoided, one couldn't get a shock unless one came in contact with two wires. There are many ways to get in contact with one wire in the ground. The number of people killed in New York City by motor accidents vastly exceeds the number of people killed by shock on low voltage circuits all over the world. That is no reason why this matter should be neglected. It is a great deal easier to prevent these deaths than it is to prevent the motor deaths.

DISCUSSION

DR. C. H. WATSON, New York: In the Bell System about 80,000 men are trained in first aid. The work has been carried on for about twelve years on this scale. I believe that, in the individual who has been in contact with electric energy and is apparently dead, the heart phenomena constitute the most important thing that is taking place. The heart has gone into a period known as ventricular fibrillation. For that reason, various ways of artificially pumping blood have been provided. I believe that the Schäfer method provides the easier administration of the mechanical pressures necessary to force blood through an individual's body, while the fibrillating heart is just churning and not sending it out into the peripheral circulation. In the last year in the Bell System 8,000 men have been working on all kinds of wiring articles. There have been six instances of electric shock, and only one of them resulted fatally. Until some other device is more easily handled and more cheaply obtained, the Schäfer method of artificial respiration should continue to be taught.

DR. HORATIO B. WILLIAMS, New York: There is a treatment for ventricular fibrillation but at present it is not applicable to cases in the field. It consists in countershock applied to the heart. In the laboratory it will succeed in a good many cases. If the equipment was available and the personnel of the plant could be trained properly they might be able to make a resuscitation with it. On the other hand one has to know for sure that one is dealing with the fibrillation before one applies countershock, which in itself is not the safest thing in the world. I may say by way of encouragement that in experimenting on animals I find there is a tendency for the fibrillation to stop in the smaller animals after a sufficient length of time, if the heart and other structures are kept alive. It may happen in an accidental case even though it is a rather rare occurrence. But it always pays to keep up artificial respiration until the last minute. I particularly like the Schäfer method because of the fact that in doing it one massages the heart and helps to keep the circulation going.

The Problem of Submersion

DR. CHARLES NORRIS, New York: Drowning is an asphyxial death. It is only essential that sufficient water be present to cover the nostrils and mouth. Sidney Smith states that a person falling into the water sinks immediately after the fall, and with the force of gravity breathing stops immediately. Deaths occur from shock or injury or heart failure due to heart lesions or inhibitions. Usually the person rises to the surface, owing to the natural buoyancy of the body, and tries to save himself. Violent attemps are made at reaching the surface, and if the head is under water a certain amount of water is inhaled and thus the dyspnea is increased. A person strikes cold water and swallows a certain amount of water, and some of this water reaches the laryngeal mucous membrane. This is really the first stage of drowning. It is known by the name of "respiration de surprise." Inhibition of respiration ensues. In other words, a person may die in water and if respiration does not start again he will not inhale water. Although he dies from asphyxia, his body will not present the picture of a typical drowning case. When a person drowns in salt water and inhales a considerable amount of salt water, the blood of the left side of the heart, on account of the absorption through the air vesicles, will be increased as to its salt content, for the reason that salt water contains more sodium chloride than does the blood.

Drowning in fresh water is the opposite. There will be less sodium chloride in the left side of the heart than in the right. The chemist who is not informed by the pathologist will report that the death is not due to drowning, because there is no essential difference in chloride content of the left and right sides of the heart. This is, of course, a grievous error. There are also a number of instances in literature in fairly well proved cases in which perforated ear drums have caused syncope and the people naturally drowned, being in the water. The postmortem signs in the recently drowned are pronounced and they offer no difficulty in determination. The convulsive movements that occur in the stage of terminal asphyxia in which the automatic respiratory efforts cause water to be drawn into the bronchi and cause air to be drawn into the air vesicles constitute the stage that produces the characteristic ballooning in the lungs. The extent of ballooning of the lungs depends on the duration of the terminal stage and the extent of postmortem signs, which will vary with the struggle.

As in almost all asphyxial deaths, the heart does not stop beating immediately, especially the right auricle, which may continue to beat after respiration has ceased. This is known as the "ultimum moriens Halleri." The beating of the heart is favorable to attempts at resuscitation, and if this is not delayed too long will be successful. If delayed, serious changes in nerve matter around respiratory vesicles will have occurred. One cannot determine on external inspection alone that a body has died from drowning. The characteristic foam at the nose, is not typical of drowning, as it is present in all cases of pulmonary edema.

In 1932 the number of submersions in New York City was 377.

An important sign of drowning is the presence of water in the stomach. It is characteristic of drowning, but it may be concealed when a person has been drinking before the accident, or if the deceased has had a very large meal. In many cases the water extends into the duodenum. I have usually found an absence of fluid in the duodenum or small intestine. I do not know the reason for this. A dead person thrown into the river will not show signs of drowning. Deaths in water from natural causes are at times difficult of determination. When the death is due to laryngeal inhibition similar to the sudden deaths due to the choking of the larynx with a piece of meat or other foreign obstacle, the determination may be of great difficulty and may be really undetermined, unless the surrounding circumstances is ascertainable, through witnesses, to give a clue.

DISCUSSION

DR. HOWARD W. NEAIL, New York: Two recent cases of drowning emphasize the importance of laboratory technic. Some children were playing in an excavation that had been made for a cellar, many miles from the ocean. When the blood from both sides of the child's heart, who had broken through the ice and drowned, was sent to the laboratory it was found that the left side contained 548.8 mg. of sodium chloride per hundred

cubic centimeters and the right side of the heart 509.6, making a difference of 38.9. It was thought that the child had drowned in fresh water, but further investigation revealed that a grocer had emptied a barrel of salt brine a block away from the cellar on the side of a hill and perhaps the salt had been washed down by rains in the water.

MR. ROBERT P. MACFADDEN, New York: The Volunteer Life Saving Corps received a charter in the state of New York in 1890. The purpose of this corps was to establish life-saving stations along the waterfronts of Greater New York, patrol the waterfront and protect the lives of people who happened to get into the water. The corps has sixty-two stations in Greater New York. There are 10,000 members of the corps, of which about 5,000 are active at present. During 1932 there were 500 rescues involving the use of resuscitation. Assistance was rendered in 800 cases not necessitating resuscitation. There were about 8,000 first-aid cases. There are no paid members of the corps at present, the work being regarded as a hobby. During 1932 the volunteers gave to New York City 35,000 days' work, which is quite a saving to the city. A good many other departments in the city sometimes take the credit or receive the credit for the work.

DR. P. N. CORYLLOS, New York: There are three periods in drowning. The first is the period of apnea, during which the blood pressure goes up. The animal defends itself and tries not to breathe. The second is the period of irregular respiration, deep respiratory movement, and the water going into the stomach and the lungs. The first and second periods last one minute each. During that time the blood pressure drops a little. In the third period there is apnea and at the same time a drop in blood pressure. An animal can always be resuscitated if respiration is started before a very marked drop of the blood pressure. But if the blood pressure has gone down to 20 mm. it is absolutely impossible to save the animal. These three stages correspond to clinical facts: (1) when the man breathes and his heart beats; (2) when the man does not breathe and his heart beats; (3) when the man does not breathe and his heart does not beat. To make sure at once whether the heart beats or not, a needle is put into the heart to make an injection of epinephrine. Another point is to insufflate oxygen. That is why I said in my paper that although the Schäfer technic is very good there is something better in advanced cases. Two things are done: Water is displaced so that oxygen can come in contact with the alveoli. The partial pressure of oxygen is increased, so that even if water cannot be displaced the chance is afforded the patient of finding a slight amount of oxygen available. Besides the intracardiac injection of epinephrine, massage through the chest must be done in order to keep on as much as possible the coronary circulation of the heart.

DR. ALEXANDER O. GETTLER, New York: The increased chloride content of the left side of the heart simply means that the person was adrift when he reached the water. In about 500 cases that we have had in the medical examiner's office, the chloride test failed to work in only two, as far as I remember. In fresh water, of course, the left heart blood has a lower chloride content because it is diluted by the fresh water. But the big point here is that when we get fresh water cases we always try to tell the person who is to do the autopsy to have the police or the detectives get a sample of the water in which the person was drowned.

The Problem of Carbon Monoxide Poisoning

DR. HARRISON S. MARTLAND, Newark, N. J.: There are from 900 to 1,000 deaths a year in New York City in the five boroughs from carbon monoxide asphyxia. In 1928 there were 567 accidental illuminating gas asphyxias and in 1932 there were 262. Those are cases amenable to resuscitation by artificial respiration. Suicides have been increasing. From 1928 to 1932 inclusive there were 5,000 deaths, or about 1,000 a year, from carbon monoxide. Coal gas doesn't amount to much, 74. The deaths from all causes during this five-year period were nearly 400,000, deaths from carbon monoxide forming 1 per cent of the total number and forming in 31,000 violent deaths 17 per cent of the violent deaths. The situation is similar in every large city of the country. More than half of these deaths are accidental. I believe that New York, in the quick resuscitation methods due to propaganda, to publicity and to this Society, is ahead of most cities in resuscitation. During the last five years in New York, since the introduction of the inhalation treatment and the elimination of bad plumbing fixtures and the like, there has been a reduction in the number of accidental illuminating gas cases. In carbon monoxide asphyviation the blood must be 20 per cent saturated to cause symptoms. In cases in which resuscitation has been accomplished so that respiration is restored, the carbon monoxide has been eliminated but the victims remain unconscious and die in coma from one to three days or gradually recover. Often in these cases futile attempts are made by giving blood transfusions or methylene blue, which do not do any good. The latter is not an antidote for carbon monoxide. The correct diagnosis at autopsy in such a case rests, especially if the case is seen about the second or third day after asphyxia, on finding bilateral degeneration in the globus pallidus of the lenticular nuclei.

The treatment of carbon monoxide poisoning is what Henderson has already outlined: First, artificial respiration immediately by the prone pressure method or any other form of producing breathing, or of restoring breathing if respiration has stopped. Second, the inhalator treatment with a mixture of oxygen, by rescue squads, keeping the patient warm, and preventing muscular exercise. No transfusions of blood should be given. Neither hypodermic, nor intravenous injections seem to have the slightest influence and may do harm.

DISCUSSION

DR. ALEXANDER O. GETTLER, New York: Qualitative tests for carbon monoxide are very good, such as diluting the blood and noticing the pink color, and adding a little alkali and noting that the pink color remains, whereas normal blood changes to a brown or a greenish brown. The spectroscope affords another test through identification of the carbon monoxide bands. Some people think that the spectroscopic method is highly sensitive, but it is not. Carbon monoxide if mixed with good blood cannot be detected if the carbon monoxide is less than 8 per cent. I was interested lately in the normal carbon monoxide content of individuals. I tried to get people who had no carbon monoxide in their blood. That is hard to do nowadays because of the smoking of tobacco, because of automobile exhausts, and because of gases produced in industry and in the home. The atmosphere always has some carbon monoxide present. In New York, blood from laboratory workers, hospital patients, clerks, salesmen and stenographers has shown an average of about 1 per cent. In street cleaners the average was about 3 per cent.

MR. L. T. WHITE, New York: The company with which I am connected is the operating agent for a large oil company. It is our function to sell gasoline. The public does not appreciate the extent to which an automobile will make exhaust gases and carbon monoxide. We developed an instrument which told the combustion efficiency of a gasoline engine. In the past two years we have analyzed the efficiency of more than 250,000 engines. We were interested to note the figures on the pronounced causes of carbon monoxide death. While the automobile is killing 30,000 people a year, it is nonfatally injuring a million. We find that virtually 85 per cent of all automobile accidents are unexplainable. What is it that makes a good driver do a foolish thing such as driving his car off the highway into a pole or into another car? The insurance people were tremendously interested in this. They are losing $14,000,000 a year on automobile insurance. It now costs more to insure an automobile for all forms of risk than it does to provide it with gasoline or oil. We are all interested in this, not only from the angle of preventing asphyxial death but also from the angle of preventing accidents and prolonging the automobile and its useful existence. In fifteen cities last summer we were amazed to find that practically every motorist interviewed noticed something which we inferred was a trace of carbon monoxide poisoning. We went out on the highways of Connecticut and flagged forty-three automobiles. We put into the automobiles a continuous carbon monoxide recorder capable of reading one part of carbon monoxide in 10,000 parts of air. We found measurable traces in 50 per cent of those cars. We found absolutely dangerous concentration in 7 per cent of the cars. We found that the concentrations were heavy when the car had some particular defect, such as a broken gasket between manifold and exhaust

pipe, an open seam in the muffler, the muffler pipe terminating ahead of the rear wheels, and leaky spaces around the pit. The manufacturer should build his automobile to prevent these dangerous conditions. The public should be told what the symptoms of carbon monoxide are. The service companies should educate the public to the need of keeping motors in efficient condition.

Asphyxiation—A Basic Problem in Medical Education

DR. WENDELL C. PHILLIPS, New York: It has been common knowledge in medical circles that many lives are lost each year by drowning, by carbon monoxide poisoning, by asphyxia of the new-born, by electric shock, by accidents of anesthesia and by drug poisoning. The conviction, however, that these fatalities are practically all due to asphyxiation is by no means so generally understood. While the total deaths due to these causes were deduced from available records, the conservatism of these deductions, suggesting an annual total of 50,000 deaths in the United States, contained so much truth that asphyxia as a major medical problem is everywhere finding acceptance.

In presenting this problem to the medical student at school, one must view it first as a basic problem of medical education the solution of which will probably require from ten to fifteen years. Secondly, it is to be viewed as an emergency problem. A continuous loss of 1,000 lives each week in the United States cannot be regarded with equanimity.

As a basic problem in medical education, asphyxiation may be dealt with in the curriculum of the medical school, first, by a policy of segregation in which emphasis is placed on all matter in the departments of anatomy, physiology, therapeutics, thoracic surgery, pathology, electrodynamics and any other department which may have a bearing on asphyxiation, and, secondly, by pursuing a policy of integration in which a new department is organized for the specific study of all matter dealing with asphyxiation.

The foregoing is merely suggestive. The head of each department must be personally approached and his interests aroused before he can be expected to emphasize this matter. The chief resistance to the second approach to this problem by a process of integration is the objection that already there are too many departments. The treatment of asphyxiation in the many fields in which it occurs presents one common factor, and this is that gases are used as the major therapeutic measure. This view, suggested by Yandell Henderson in 1928 provides a common ground and deals with the closely related activities known as resuscitation, anesthesia and oxygen therapy. It would appear that the personnel must be trained and equipment provided from the vantage point of a new department organized for the purpose of meeting an actual need in the medical field. When an asphyxial accident occurs in the ward, a trained physician capable of applying modern methods of resuscitation should always be available. Trained personnel for this work is daily functioning in the department of anesthesia, since the anesthetist is familiar with the care of the unconscious patient and has a substantial groundwork on which refinement of technic may easily be added. Such a functioning department would immediately lend protection to the now uncovered fields of resuscitation and oxygen therapy. The importance and the dignity of this office would promptly be recognized and authority that is now lacking would be conferred. The director of such a department would be interested to assemble facts relative to the scientific and technical treatment of resuscitation and the problems of internal medicine as they are now faced in oxygen therapy.

A policy of integration designed to reduce the present mortality from asphyxiation as applied to the curriculum of the medical school appears to offer the greatest hope of relief.

DISCUSSION

C. R. REYNOLDS, Colonel, M. C., U. S. Army: While the medical department of the army is spread out in stations in the United States, Alaska, the Philippine Islands and Puerto Rico, it is at the headquarters represented by the Surgeon General's Office and the Army Medical School that most can be done. It is there that the principles of training are formulated and passed out in the service. From the standpoint of therapy, medical officers go along with the medical profession. They come to the army as doctors. The training they get at the Army Medical School is in the nature of a postgraduate course. I believe it is just there that greater emphasis can be given in the matter of anesthesia and oxygen therapy. I believe right there is where the greatest effect can be made in putting over the principles of this society in the military service. We in the medical corps are constantly training R. O. T. C. students at the medical schools. We get them in camp for about six weeks during their college course. There they are given training in first aid and principles that have been discussed here. We also train many thousands of the C. M. T. C., boys between the ages of 17 and 21. There again is a great opportunity of putting over a training program. We come in contact also with a large number of reserve officers. There are something like 17,000 men of the civil profession who come to the army from year to year to receive special training. It is among those that we try to emphasize the matter of first aid and the care of the injured. We come in contact with the national guard. It is in that field I think that the army medical corps can do its greatest work in emphasizing the matter of resuscitation. I believe a real step can be made by emphasizing the importance of the subject to the surgeon general and to the officials of the Army Medical School.

DR. L. F. ANDERSON, Buffalo: In the hospital with which I am connected we have adopted a plan that no one but a legally qualified physician shall administer anesthetics. Each intern is put under the instruction of one of our anesthetists on the staff. Each year we are turning out interns capable of giving gas anesthesia and doing a certain amount of work in oxygen and in carbon dioxide therapy. It is regrettable to my mind that in the great teaching centers in some cities the instruction of physicians inanesthesia, in oxygen therapy, is left to the nurses. The time is at hand when it should be a legal measure that only qualified physicians should be allowed to administer anesthetics or do gas therapy.

The Sound Picture as a Medium of Instruction

F. L. DEVEREUX, New York: An educational talking picture must be the result of the preparation of scenarios that have stood the test of group discussion. It must grow out of production technics that take advantage of the latest scientific developments and must be the result of tests and measurements that serve as guides to the best use of attention-directing and interest-arousing devices. Fortunately, for the past five or six years a serious development of standards for educational pictures has resulted. Research procedures have been well established and methods of production are available today, so that a picture can be made with a reasonable certainty that it will accomplish the objective desired. As proof of that three experiments were conducted—one by Dr. Arnspiger, of Teachers College, Columbia University, and one by Dr. Rulon, of the Graduate School of Harvard University, and one by Dr. Stoddard, superintendent of schools of Providence.

The Arnspiger experiment involved children in sixty-four schools, 3,600 children all told, with a controlled experimental group, one with the talking picture and one without the talking picture. Columbia University has published a book showing that the children with the picture gained 25 per cent more in the Arnspiger experiment than the children without the picture and that on a recall, a retention test of six months later, the children who had seen the picture retained two-thirds more than the children who did not.

The experiment of Rulon at Harvard is a confirmatory experiment.

Dr. Stoddard at Providence took 200 junior high school students in an auditorium with a teacher and the talking picture. He had 200 children in an auditorium with a teacher and no talking picture. The result of the experiment was that the children in the auditorium with the picture gained probably 12 or 14 per cent more than even the best conducted class of thirty-five that was in the school.

There is no picture relating to asphyxia, but at Dr. Flagg's suggestion I have put together four typical pictures, not one of which relates specifically to this field. One of the pictures shows how it is possible to deal with abstract problems in connection with asphyxiation, such as the diffusion of gases taking place in the airway, the matter of partial pressures on which the percentage of oxygen depends, and the matter of vapor tension and the well known fact of atmospheric pressure. Also,

the effects of cold and heat on the behavior of gases and the effects of pressure. The prevention of asphyxial death, is a subject that demands the use of a medium that will dramatize the possibilities and compel people to think seriously about this important work of prevention. The problem calls for the use of a medium that will save time in the dissemination of the essential ideas. In this respect the educational talking picture presents an outstanding opportunity for a worthwhile contribution to the health and well being of millions of people.

Negative Pressure Cabinet (Respirator) Treatment of Asphyxia

DR. DOUGLAS P. MURPHY, Philadelphia: I understand that the words "negative pressure" constitute a wrong term, because any pressure that is above zero isn't negative. But the term is used generally, so I will assume that it is any pressure subatmospheric.

Artificial respiration carried on by varying the air pressure on the surface of the body was described first by Doe in 1889. Devised for the treatment of asphyxia of the new-born, his apparatus consisted of a box covered at one end with a piece of sheet rubber. The apparatus as used by Doe in the period of 1888 and 1889 was simply a wooden box and across it was a piece of sheet rubber with a hinge at one edge and a hook on the other edge. The infant was placed into a plaster mold and the mouth and nose were applied to the opening in the rubber, and then the attending obstetrician would merely suck and blow on the piping connected with the box. With this apparatus it was stated that some fifty patients were treated.

Mechanically induced changes of pressure were employed clinically by Drinker and Shaw in 1929. Their apparatus differs in principle from that of Doe in that the head of the patient protrudes from the box through a snugly fitting rubber collar, and the variations in air pressure are produced by an electrically driven pump and valve arrangement.

The mechanically operated negative pressure cabinet is limited either to the treatment of patients who are stricken with respiratory weakness or paralysis in institutions possessing such a machine or to patients who can reach a machine before death occurs. The respirator also should be limited to the treatment of individuals whose upper air passages are clear. The respirator as an instrument for initiating and maintaining artificial respiration operates primarily by producing a subatmospheric pressure on the thoracic walls. When this occurs, the lungs are inflated by the force of the normal or atmospheric pressure acting through the subject's nose and mouth, which are outside the negative pressure cabinet. Release of the negative pressure in the cabinet, with a return here to atmospheric pressure, permits the expanded respiratory muscles to contract and thereby to expel the air forced into the chest by the atmospheric pressure outside the cabinet. Repetition of these changes produces respiratory movements. To ascertain that death has occurred, it may be necessary to open the cabinet—which interrupts the treatment—and auscult the heart. The difficulty encountered in getting at the body without interrupting treatment is a disadvantage of this method of artificial respiration. If the heart continues to beat, though spontaneous breathing does not take place, treatment naturally should be continued indefinitely.

I observed an infant who was badly asphyxiated. During the first five minutes the child took no breath. During the second five-minute period it took two breaths, during the next five-minute period approximately five, then six, then four, and then eight, and so on, until at the end of an hour and a half the rate of breathing became too rapid to record and the respirator was stopped. The respirator has made this opportunity available to study the physiology of the return of the respiration in the asphyxiated infant.

It is not known how much damage the asphyxiated infant receives if it is asphyxiated for a long period. I refer to the damage that may or may not occur to the brain cells. In after life, many people show signs of deterioration or retardation in various things. As far as I know there are no studies that have carefully correlated the inadequacy of breathing or the damages that occur at birth with troubles which follow. It would seem to be wise, not knowing what will happen, to try to supply to the new-born infant as nearly as may be an adequate aeration from the time the infant begins to gasp until the breathing activity has a normal rate or amplitude or both.

Whether Dr. Flagg's method or the respirator or whatever one uses, one should continue to use it during the period when it is possible that the breathing mechanism is not supplying an adequate amount of oxygen. Certain asphyxiated individuals, though their cardiac action continues, fail to develop spontaneous respiration in the negative pressure cabinet. Others possessing a small amount of respiratory power become progressively worse. In such cases the inexperienced attendant frequently feels called on to increase greatly the degree of negative pressure. Any great increase in this pressure is unwise. It is quite dangerous to do what one shouldn't do in the treatment of individuals who appear to be failing or who are not beginning to breathe. Extremely serious damage can be done by these high degrees of negative pressure. To the conscious individual or to the one with a certain amount of muscle tone, there is enough checking of the inspiratory movement to prevent that; but it is extremely exhausting to the individual. If a patient is unconscious and has no control, one can expand the chest to such degrees as to rupture every alveolus in the lung. It is important, therefore, that the use of so powerful an instrument as a respirator be operated only by a person familiar with its potential danger.

If asphyxia is caused or is aggravated by an unusual increase in intracranial pressure due to cerebral congestion or intracranial hemorrhage, the use of a respirator should tend to relieve the cerebral congestion and thereby reduce the intracranial pressure.

There seems to be no contra-indication to the use of the negative pressure cabinet in the treatment of any adult or infant suffering from respiratory embarrassment, except in the case of individuals whose upper air passages are obstructed. In its use the subject is exposed to no force that cannot be both controlled and measured.

DISCUSSION

DR. PALUEL J. FLAGG, New York: Some years ago I became associated with Dr. Chevalier Jackson in the perfection of a technic for anesthesia for operations about the head and neck. This technic consisted in a simple equipment for laryngoscopy, for apparatus designed to supply suction, and for especially designed tubes that might be intubated without trauma and with which oxygen and carbon dioxide could be delivered under measured pressure. It is unfortunate that this technic should have come to be associated with my name because all that I contributed was the construction of a pocket flashlight laryngoscope which does away with the resistance offered by the small-wired laryngoscope used for bronchoscopy, by the suggestion that it is essential to supply facilities for suction in all cases and by the assembling of a delicate water manometer. I would like to make it plain that no officer of this society is in any way interested in the sale of any equipment. When this society was organized we clearly emphasized that point and renounced all commercial connections with all equipment, so that any reference I make to equipment which happens to bear my name has no strings to it. The question of suction is vital. I would suggest that, when one wants suction that will work perfectly, one use the mouth suction with a bell tube under direct vision.

In submersion work it has been found that one of the most effective sources of suction is the suction supplied by the intake manifold of the engine, which one can attach immediately through connecting with the windshield wiper. An ambulance at the Coney Island Hospital was equipped for one summer. We chased submersion cases every Sunday during that one summer. We had a bus equipped with a suction line to the intake manifold and we had a powerful suction always attached to the car and instantly available on an ideal engine. Another form of suction consists of a suction produced by fluid falling from one bottle into another. The height of the drop and the speed of the volume flowing determines the amount of the suction. This suction is available on a beach where there are no facilities at all in the way of our ordinary equipment. It can be attached to a post on one of these observation stands, as one sees in Coney Island. When the contents of the bottle have fallen out, it swings around and the bottom bottle comes at the top, and one has to continue suction.

The question of insufflation was one that we devised from the ground up. Nobody knew anything about the size of the tube or the length of the tubes, what the baby would tolerate, or anything about it five years ago. The diameter of this tip is approximately 3 mm. The tube is velvetized, and repeated intubation in the same infant for long intubation, checked up postoperatively, post mortem, shows no irritation. We lubricate our instruments in all intubations with sterile oil or petrolatum and we have no postoperative intubation irritation. The adult tube is merely a shortened bronchoscope. Laryngoscopy of the asphyxiated patient, the anesthetized patient, is an entirely different procedure than laryngoscopy of a normal patient with cocainization.

The medical relief of asphyxiation turns on the pivot of prompt laryngoscopy and intubation. Furthermore, with such a procedure one can immediately introduce oxygen and carbon dioxide under measured pressure and get effects at once which one strives to get over a long period with the prone pressure Schaefer method or with the use of an inhalator.

DR. JOHN D. KERNON, New York: I find that very few practitioners know how to use a laryngoscope. They regard it as sort of a piece of magic that is to be learned only by the especially gifted, whereas almost any one having the amount of intelligence that an educated physician is supposed to have can learn to use a laryngoscope efficiently. In using the laryngoscope to find out what the trouble is, one may find possible laryngeal abscess, abscess of the tongue, abscess of the lingual walls of the pharynx, and so on. At times in face of infection of the neck it isn't the best thing to do a tracheotomy on account of the danger of introducing septic material into the lungs. I have been an advocate of preceding tracheotomy by the use of the bronchoscope or by the use of one of these tubes, because a tracheotomy in the face of impending asphyxiation is very difficult to do. I want to urge education of the profession to use the laryngoscope and to use the bronchoscope or the intubating tube for purposes of overcoming temporarily laryngeal obstruction and as a measure preceding tracheotomy.

DR. ETHAN F. BUTLER, Elmira, N. Y.: The point of a tracheotomy with the bronchoscope in position is important. I believe that if a few minutes of extra time has to be expended placing the bronchoscope in position there will be regained twice as much in the speed of accomplishing tracheotomy and preventing an undue flooding of the lower airways with blood and other secretions. This to some extent is pioneer work. All pioneers have a certain element of obstruction and inertia to overcome. To what extent communities are going to be prepared to meet the sudden, unforeseen emergencies of threatened or actual asphyxiation has got to depend largely on community reaction to these problems. There will be a tremendous inertia to overcome, but as the years go on the community attitude will be "Let us be prepared so that even the few asphyxial deaths that may be expected in our communities can be reduced."

DR. DOUGLAS P. MURPHY, Philadelphia: Every new-born child, whether one withdraws fluid from the trachea or from the pharynx or doesn't touch it at all, should be kept head down below the horizontal for perhaps the first twenty-four or forty-eight hours. I feel certain that, if the group that is producing artificial respirations with submersion cases would add to the situation the keeping of the individual's head down for a considerable time, so that the fluid will gravitate to the nasal pharynx, it will save more lives.

Neuropathology Attending Asphyxia from Carbon Monoxide and Atmospheres Deficient in Oxygen

DR. R. R. SAYERS, Washington, D. C.; DR. JOHN CHORNYAK, Pittsburgh, and W. P. YANT, Pittsburgh: The chemical and pathologic reaction of dogs to asphyxia by carbon monoxide and by atmospheres deficient in oxygen was studied recently by the U. S. Bureau of Mines and the U. S. Public Health Service. This study was conducted to obtain information on the response of the organism to asphyxial environment, with the idea of devising a procedure for treating moribund cases of carbon monoxide poisoning that do not respond satisfactorily to present methods. The scope of the investigation includes the reactions attending comparatively rapid asphyxia and comparatively slow, prolonged asphyxia. In some of the experiments the exposure was continuous until death occurred; in others it was terminated when the first indication of terminal symptoms was observed. Some of the animals recovered from the acute effects and others died within from a few hours to three days. The ones that recovered were kept for observation for periods ranging from a week to five months. Autopsies on the animals were held immediately after death and the brains were removed. The brain in the gross was very edematous and markedly congested. The most striking finding was a severe perivascular and perineuronal edema, which was marked in the corpus striatum, the cortex, and the dorsal motor nucleus of the vagus nerve. The vessels were greatly dilated and tightly packed with red blood cells. This stasis was marked throughout. There were a few petechial hemorrhages, especially in the corpus striatum and cortex. Most of these were no larger than would occur by diapedesis through the dilated vessels. Occasionally a few leukocytes, both lymphocytes and polymorphonuclear leukocytes, were found in the perivascular spaces. The endothelium of the capillaries appeared to be swollen in some areas.

The neurons were extensively damaged. Many of the nerve cells seemed to have been ruptured. In some areas all that appeared to be left of the nerve cell was a swollen, distorted and vacuolated nucleus with a little Nissl material around it. A clear space marked the site of the original cytoplasm of the neuron. In other areas there was a marked central chromatolysis with distorted nuclei. Not all the cells in the same brain were equally damaged. There was a variation in the degree of damage with different animals exposed to 0.6 per cent carbon monoxide for from twenty to thirty minutes. With three of the four dogs studied the variation was not marked, but the fourth showed distinctly less damage. The foregoing conditions were, however, present to some degree in all the animals.

The lesions due to eight and fifteen-hour exposures to from 0.18 to 0.22 per cent carbon monoxide differed in degree only from those described due to comparatively rapid carbon monoxide asphyxia or exposures that caused death in from twenty to thirty minutes. The circulatory changes, such as dilatation of the vessels, stasis and perivascular edema, were marked in the long exposures. The hemorrhages were also more frequent and more extensive. In many of the hemorrhagic areas as well as in some of the extremely dilated vessels the red blood cells had undergone disintegration. The perivascular areas, especially in the meninges, were infiltrated to a greater degree with leukocytes. The edema in the medullary substance was much more severe, in many areas giving the medullary substance a very loose, mesh-like appearance. There was an increase in number as well as in size and an occasional difference in shape of the neuroglia. Occasionally, very large clear spaces were found throughout the medullary substance. These were not observed in the animals that died after from twenty to thirty minutes of exposure or in unexposed controls.

The degenerative changes of the neurons in general were also more severe in the long exposures. There were areas, especially in the cerebral cortex and the corpus striatum, that were apparently completely destroyed. The results of this study substantiate the belief that the damage incident to carbon monoxide is diffuse. It is not specific for any one area of the brain, although not all types of cells in any particular area are equally affected.

The neuropathologic changes produced in six dogs by fatal exposures of from fourteen to thirty-five minutes and in four rats by fatal exposures of from twenty-eight to seventy-two minutes to atmospheres deficient in oxygen was studied. The circulatory changes in the dog were characterized by dilatation, stasis involving the entire capillary system, and perivascular hemorrhages.

There is a marked difference in the susceptibility of the nerve cells to oxygen deprivation. The cells of the cortex, especially those in the outer granular layer, thalamus, sensory centers and correlation centers throughout the brain stem and the visceral efferent nuclei, are the most sensitive. There was a marked difference in the reaction of the nerve cells of the rat as compared with those in the dog. There are two general types of degenerative changes in the nerve cells following asphyxia: Some become shrunken and stain diffusely; others show varying degrees of chromatolysis. These observations on the differences in the reaction of dogs and rats to atmospheres deficient in

oxygen are in general alinement with the current neurologic views on cerebral mechanisms. They also reveal the serious difficulties that are encountered in formulating theories on cerebral mechanisms in human behavior from data on rats.

The Factor of Chemical Injury in Asphyxia

LEON A. FOX, Major, M. C., U. S. Army: The chemical agents used in war are not insidious, nonirritating agents like carbon monoxide and hydrocyanic acid. They are, on the contrary, violent respiratory irritants. A great many deaths listed as due to chemical injury are really asphyxial deaths. Exposure to concentrations of many chemicals for periods that produce unconsciousness and cessation of respiration can be very promptly recovered from if the patient is removed to an atmosphere free from the contaminating agent and given a brief period of artificial respiration. Fortunately, there are not a great number of agents that are so insidious and difficult to detect as carbon monoxide. However, the toxic chemicals that do give some warning, but insufficient to provide adequate protection, are all too numerous. Hydrocyanic acid gas is such an agent. Hydrogen sulphide is another. There is a large group of anesthetizing hydrocarbons that may produce casualties. Some are used as anesthetics in medicine. Many more are required by industry. In addition there are the halogen substitution products of this great group. These halogen derivatives are also frequently encountered in industry. Carbon tetrachloride, tetrachlorethane and trichlorethylene are well known examples of this group.

A special group of agents has been added to the list of chemical hazards. I refer especially to the refrigerating agents that are employed in the circulating systems of modern refrigerating plants.

In a very few instances it is believed that airplane accidents have resulted from pilots being overcome by carbon monoxide. The army gas mask does not provide protection against carbon monoxide.

Carbon dioxide may be a most important factor in producing asphyxial death. It must be remembered that while 7 per cent of pure oxygen can be replaced with carbon dioxide with great advantage to the patient in some resuscitation work, 7 per cent of the oxygen present in air cannot be replaced with carbon dioxide. If the 20 per cent oxygen in air is replaced with any large part of carbon dioxide, symptoms of severe anoxemia are presented and asphyxia may ensue. This is not carbon dioxide injury. This is pure oxygen privation. The substitution of carbon dioxide for the oxygen in the atmosphere produces the chemical hazard.

Cyanide deaths are especially sad, for in many instances they occur under conditions that are entirely preventable. The army gas mask, equipped with the regular canister, should not be used to provide protection against cyanide poisoning. A special canister is prepared for use with the mask to neutralize this toxic agent.

Many casualties are caused by exposure to the violent lung irritants such as chlorine, phosgene, sulphur dioxide, nitrous fumes and other acid radicals, as well as injury from ammonia and other respiratory irritants. Immediate asphyxia is not an extremely important factor in these injuries. These caustic agents actually unite with and destroy the respiratory tract by their direct chemical activity when heavy concentrations are encountered.

On exposure to concentrations of lung irritant gases that are less powerful, respiratory irritation and embarrassment immediately occur; but if the patient is removed from the contaminated atmosphere these symptoms promptly subside. Dangerous symptoms develop later. These patients often have a period of comparative freedom from all symptoms. Then, from two to four hours later, possibly even twelve to twenty-four hours later, symptoms of severe lung edema develop. Ordinarily these patients are in the hands of medical attendants long before these symptoms ensue. These attendants should always remember the danger of delayed lung edema in such cases. Cases of this type of chemical injury have been prematurely discharged from the hospital with fatal results. One must never let enthusiasm for special agents have the effect of diverting attention from the proper general treatment of all cases that present symptoms of asphyxia. Cessation of respiration, whatever the cause, is a symptom incompatible with life. It must be remembered that the first, last and most important therapeutic step is to pump oxygen into these individuals—if only air is available, by means of artificial respiration.

Problems of Respiration in Naval Medicine

E. W. BROWN, Captain, M. C., U. S. Navy: There are situations peculiar to naval medicine which group themselves around the problems of respiration. These are illustrated in submarine ventilation, deep sea diving, altitude flying, naval gas warfare, and accidental conditions in which oxygen deficiency or gas poisoning is encountered. In all these situations the limiting factor is human respiration and many have undergone recent developments of particular significance to the naval medical officer. During the past five years, ten persons have been killed and additional nonfatal casualties have resulted from entering compartments of naval vessels which have been sealed for prolonged periods and without prior ventilation. Additional cases have been reported within recent years from the British admiralty. In all these instances men had entered such spaces without taking the precautions laid down in the regulations.

Reports have been made in the literature of sudden death from men entering the holds of merchant ships that had been hermetically closed for long periods; but in these instances the atmospheric changes were due to decomposing fruit, grain or other vegetable matter. The recent cases in the U. S. Navy have occurred in connection with virtually empty spaces, notably in ship's blisters and submarine pontoons. The so-called blister is a characteristic of the modern battleship developed since the World War and designed for torpedo defense. It consists of a false hull overlying the original hull reinforced by transverse and longitudinal frames and conforming to the longitudinal lines of the ship. The maximum depth of the blister is about 40 feet from top to bottom. The blister is subdivided into twenty sections of two compartments each on either side of the ship, with manholes provided for communication. There are a total of eighty blister compartments. The interior is painted and kept hermetically closed to insure water-tight integrity except for inspection and possibly renovation at intervals of six months.

In a blister compartment on the U. S. S. *New York* in 1929 the manhole cover was removed and an officer and three men entered without the precaution of preliminary ventilation. Just as the officer entered the lower compartment of the blister he fell to the bottom, apparently overcome. The three men with him immediately descended the ladder to his assistance and all three collapsed. Two additional persons reaching the bottom were also incapacitated. Ultimately nine persons were incapacitated and the officer and one man died. The symptoms of those recovering were diagnosed as due to carbon monoxide. The blood of the two who died was positive for carboxyhemoglobin. Another disaster occurred incident to entering a compartment of a submarine pontoon in December, 1931. The pontoon is a metal drum designed for the raising of sunken submarines. The compartment had a capacity of about 1,540 cubic feet and was ventilated for a very brief period but not adequately, as required by regulations. Three men descended and were immediately overcome. Three additional men were incapacitated in attempting to rescue their co-workers. The first three men were dead when finally removed.

Belli, by experiments in the Italian navy, showed that the oxygen in a ship's double bottom can be reduced to 3 per cent by the use of red lead paint.

Gardner pointed out that, when linseed oil or similar drying oils are spread in thin layers, the absorption of oxygen which takes place on drying is accompanied by the evolution of carbon dioxide and organic substances, carbon monoxide also being evolved in small amounts.

A study of the vitiation of the air of confined spaces of naval vessels by different types of paint containing linseed oil has been in progress at the Puget Sound Navy Yard for the past two years. Additional studies are in progress with an experimental test tank fitted with sixteen removable plates of definite area for coating with different types of paint. It has been determined with a linseed oil paint that oxygen absorption and carbon monoxide emission no longer occur after an exposure of approximately eight days. A ventilating period of ten days after painting would therefore remove the hazard of dangerous vitiation on closing such a blister. As would naturally be anticipated,

the use of a bituminous paint free from linseed oil does not change the contained atmosphere. It has been calculated that a 15-inch gun with its charge of 400 pounds of smokeless powder will give off 2,500 cubic feet of carbon monoxide each time the gun is fired. If for any reason any portion of the gases are permitted to blow back into the turret in which the gun is mounted, the carbon monoxide will produce symptoms. This is normally prevented in the U. S. Navy by means of an automatic air blast, which instantly clears the barrel of all traces of explosion gases. However, aboard H. M. S. *Iron Duke* in 1930 three men were overcome by fumes blown back into a turret during the firing into a head wind of 6 pounder subcaliber guns after approximately eighty rounds. These cases were diagnosed as carbon monoxide poisoning. All the men recovered.

Fairlie has reported a study of powder gas casualties in the World War. Eleven casualties, two of which were fatal, resulted from nitrous fumes in the battle of Jutland. Seventeen cases, with fourteen fatalities, occurred in 1916 aboard H. M. S. *Russell* as a result of fire and explosion incident to contact with mines. Fifty-six cases were reported from H. M. S. *Brittania*, with twelve fatalities, following torpedoing of the ship and a subsequent fire in one of the magazines. The clinical reports of these disasters emphasize the period of latency, which is an outstanding aspect of poisoning with nitrous fumes as after poisoning with phosgene, a chemical warfare gas. The initial symptoms of irritation may be comparatively slight and pass off readily, to be followed by severe or even fatal pulmonary edema after a variable interval. Many of the patients from the *Brittania* were landed apparently in normal condition and carried on for many hours before serious signs developed; the latent period of these cases averaged from ten to twelve hours.

The *Mississippi* disaster in our navy in 1924 resulted from the accidental ignition and therefore burning of a powder charge in a turret mounted with 14-inch guns during target practice. Forty-eight men were killed, only two persons in the turret surviving. The head and hands of practically all the dead showed signs of burns but in the majority of instances not sufficient to account for death. Evidences of asphyxiation were present, although no blood examinations for carboxyhomeglobin were conducted.

About four months later a similar accident with burning powder occurred aboard the U. S. S. *Trenton*, involving the forward twin gun mount with a total loss of fourteen men, only five of those exposed having survived. The blood was examined for carbon monoxide hemoglobin in all of these cases with negative results. This result with reference to the survivors did not appear consistent, although the period of exposure to the fumes was short. Death was generally ascribed to extensive burns and shock.

The question of the possible hazard of carbon monoxide in relation to aircraft was exhaustively studied by the Bureau of Medicine and Surgery in conjunction with the Bureau of Aeronautics. It was concluded that in some types of airplanes, depending on the arrangement of exhaust leads, fuselage, and so on, carbon monoxide is carried back to the cockpits in sufficient concentration to result in as much as 15 per cent saturation of the blood of the pilot and other occupants of the airplane. Although the highest saturation of blood obtained during the study would not be sufficient to render a person unconscious, the absorption of even minute amounts of carbon monoxide is highly undesirable, owing to the possible effect on the efficiency of the pilot. It was evident that a definite hazard existed in this regard. Immediate steps were taken to eliminate the carbon monoxide by a simple and inexpensive modification of the exhaust leads of those airplanes. The specifications now prescribe that all new airplanes in the future shall be tested at the factory for carbon monoxide and if present eliminated before final acceptance by the navy. The submarine is propelled on the surface by means of the Diesel engine and in the submerged condition by the electric motor. The electric current is furnished by 120 storage batteries to each vessel. Owing to limitations of weight and space, air-purifying equipment must be reduced to a minimum. It is therefore impracticable to maintain the atmosphere of a submarine at the normal atmospheric concentration of 20.9 per cent oxygen and 0.03 per cent carbon dioxide. In the majority of submarines of the U. S. Navy the carbon dioxide will ordinarily not reach 3 per cent until the end of seventeen hours. Air purification therefore is not used unless longer periods of submergence are contemplated. Under ordinary conditions the periods of submergence are so short that purification is not required. It is of course a comparatively simple matter to calculate the time of submergence required to reach the limiting figure of 3 per cent carbon dioxide on the basis of the average volume of carbon dioxide exhaled hourly per man and the cubical capacity of the contained air of the vessel. Under the conditions of a disaster such as that of the *S-4*, which sunk off Provincetown in 1927, the electric power is practically always out of commission and forced ventilation therefore stopped. In the *S-4* disaster, six persons were trapped in the torpedo compartment without provision for removal of carbon dioxide. The last signal received by divers from the survivors was seventy-five hours after the collision. It is estimated from the cubical air space of the compartment and the approximate hourly output of carbon dioxide at rest for six men that a concentration of approximately 9 per cent was reached. Life at least existed under these conditions.

The accidental access of salt water to the electric storage batteries of a submarine evolves chlorine gas. A special type of gas mask designed for the specific purpose of protecting against chlorine is provided for all personnel.

The submarine escape apparatus has been adopted for individual escape from submarines. The mechanism of action consists of a rubber bag of approximately the cubical capacity of the human lungs, connected above to a mouthpiece with inhalation and exhalation tubes, and provided below with an escape valve through which the expanding air escapes during ascent. A small canister of soda lime is included for the absorption of carbon dioxide. Preliminary to the donning of the appliance for escape the compartment of the sunken submarine is flooded with sea water, compressing the air therein to the pressure of the outside sea and thereby allowing for the opening of the hatch of the compartment. The breathing bag of the escape appliance is then filled with oxygen and the mouthpiece is inserted in place. The individual then ascends along a buoy line at a prescribed rate. If the rate of ascent is excessively rapid, particularly if the subject withholds his breath, there is a distinct hazard involved in that a dangerous rise of intrapulmonic pressure may develop. Thus far in training with the submarine "lung" two fatalities and eight other cases of cardiovascular collapse have been reported under these conditions. It is concluded that these injuries were due to air embolism.

DISCUSSION

DR. M. H. FOSTER, New York: In our work in the Public Health Service we are chiefly concerned with deaths from hydrocyanic acid gas. In quarantine work the problem is to be certain that our ships are free from the gas before we allow the personnel to go back into the ship and go down into the hold. They use a test paper and simply throw sheets of this paper down into the hold and watch its behavior. It is a bright yellow copper, and if it turns pink rapidly it is a good thing to keep out of there. If it turns pink slowly it is safe for one of the disinfectors to go down. These men do not wear gas masks and they do not depend on anything else except their sense of smell. When they get down there if they don't smell too much of the hydrocyanic acid gas they feel free to go ahead with their work. It depends a great deal on the temperature, on the humidity, on whether or not the ship is in motion, and on how much cargo there is in the hold. If one can get the ship under way and let it go for three or four miles against the wind, it will blow out. We had one fatality, of a child who was placed on a bed and allowed to sleep on a pillow against our instructions.

DR. R. R. SAYERS, Surgeon, U. S. Public Health Service: There has been protective equipment developed, gas masks and the oxygen breathing apparatus. Every one of these has its limitations. If you will put a rope onto a man if you are going to let him down, you can pull him back out again, whether you are on board ship or whether you happen to be on a farm going down into a well. The first thing is to find out whether you can go in safely or not. Davis developed a safety lamp used in the mining industry which will tell when a flammable gas is available. One can use a bird, a mouse or a cat. Lower the animal into the compartment you

are going in. After it has been there a few minutes if it gets along all right it is probably safe for you to go in. Then if you are going to go in and are still not sure about it, you ought to have a rope around you, and you ought to have somebody on top big enough and strong enough to get you out again. That method is being used in industry quite regularly.

DR. E. W. BROWN, Washington, D. C.: Answering Dr. Foster's question in regard to the training in the use of the escape apparatus, we have a systematic course of training for submarine personnel. They must qualify in the use of the apparatus to remain in the submarine service. Some of our trained personnel have ascended 100 feet without the use of anything. They have simply gone down in the submarine bell in this tank and the ascent is made without any lung apparatus whatever. It involves of course a rather spectacular aspect of training. We don't advocate that of course as a means of escape, but merely as an emergency.

Current Medical Literature

AMERICAN

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Titles marked with an asterisk (*) are abstracted below.

American Journal of Medical Sciences, Philadelphia

187: 297-432 (March) 1934

Study of Jaundice in Syphilis: Its Relation to Therapy. U. J. Wile and W. M. Sams, Ann Arbor, Mich.—p. 297.
Therapeutic Pneumothorax in Experimental Lobar Pneumonia in Dogs. L. M. Lieberman and S. S. Leopold, Philadelphia.—p. 315.
Pneumothorax Treatment of Pulmonary Tuberculosis. E. H. Rubin, New York.—p. 331.
Behavior of Diaphragm After Phrenico-Exeresis. H. Schwatt, Spivak, Colo.—p. 338.
Effect of Pregnancy on Insulin Requirement of the Diabetic. G. G. Duncan and F. Fetter, Philadelphia.—p. 347.
Rheumatic Fever in Piedmont, Virginia: I. Incidence and Clinical Manifestations. A. D. Hart Jr., J. E. Wood Jr. and A. D. Daughton, University, Va.—p. 352.
*Hemorrhagic Eruption of Mouth and Throat in Rheumatic State. E. Holtz and G. Friedman, New York.—p. 359.
Neuralgias of Head and Face. F. L. Reichert, San Francisco.—p. 362.
Simplified Apparatus for Direct Venous Pressure Determination Modified from Moritz and v. Tabora. G. C. Griffith, C. T. Chamberlain and J. R. Kitchell, Philadelphia.—p. 371.
Facts on Disease of Coronary Arteries, Based on a Survey of Clinical and Pathologic Records of Seven Hundred and Sixty-Two Cases. R. L. Levy, H. G. Bruenn and Dorothy Kurtz, New York.—p. 376.
*Differentiation of Acute Coronary Artery Thrombosis from Pulmonary Embolization. S. H. Averbuck, New York.—p. 391.
*Renal Amyloidosis in Relation to Renal Insufficiency. H. M. Dixon, Philadelphia.—p. 401.

Hemorrhagic Eruption of Mouth in Rheumatic State.—Holtz and Friedman observed an enanthema consisting of an eruption of hemorrhagic spots in the mucous membranes of the mouth and throat of patients with rheumatic heart disease, also in other diseases included in the concept of the rheumatic state, and in relatively few patients in whom there was no apparent rheumatic infection. It has been seen more frequently during the course of rheumatic heart disease than in any other condition and the seasonal peak of its frequency in this disease coincides with that of acute infections of the upper respiratory tract and carditis. In nineteen cases of rheumatic valvular disease of the mitral and aortic valves, examined at biweekly intervals for four months, hemorrhagic spots were found in nine cases at the initial examination and in a total of thirteen cases during the period of study. Of twenty-nine cases without rheumatic valvular disease, chosen at random for control, spots were found in only one case.

Differentiation of Coronary Thrombosis from Pulmonary Embolization.—Averbuck observed six patients who were presumed to have had fatal attacks of coronary artery thrombosis but in whom necropsy revealed that they had succumbed to pulmonary embolization. In two instances the diagnosis was difficult in that coronary artery disease had previously been present. Death was caused by a pulmonary embolus. In the other four cases no previous evidence of coronary disease had been present, but death was shown at necropsy to be due to pulmonary embolus. The author believes that, when the clinical picture suggesting coronary artery thrombosis occurs in a female patient who has neither arterial hypertension nor diabetes, a pulmonary embolus should be suspected. The high incidence of embolic phenomena in the female sex arising from abnormal pelvic conditions is an important factor. If the history suggests previous evidence of peripheral vascular involvement, i. e., phlebitis, unilateral leg edema, pelvic disease or abnormalities of the lower extremity, the likelihood of the coronary syndrome being caused by an embolus to the lungs is strengthened. Postoperatively, the clinical picture of pulmonary embolus readily simulates coronary thrombosis. When one recalls that pulmonary emboli are frequent after operation and that coronary thrombosis is comparatively rare because patients having coronary disease are spared any but emergency surgical procedures, such cases will be correctly analyzed. In a hyposensitive individual, when the diagnosis of coronary artery thrombosis is made in the absence of pain, and dyspnea is the principal sign, the possibility of a pulmonary embolus must be excluded. The conditions may coexist.

Renal Amyloidosis in Relation to Renal Insufficiency.—Dixon found 100 cases of renal amyloidosis in 9,613 consecutive necropsies. Tuberculosis of the lungs (70 per cent) and bones (8 per cent) was the etiologic disease in 78 per cent of the cases. The highest incidence of renal amyloidosis occurred in the third decade of life. Twelve of the forty-six cases in which sufficient evidence was available were associated with renal insufficiency. Obstruction of the glomerular capillaries by amyloid deposits is a factor in the causation of renal insufficiency. Hypertension is relatively infrequent in amyloid disease of the kidney. Of thirty-five cases with blood pressure readings, the systolic pressure was above 150 mm. of mercury in only four (12 per cent). In the cases of renal amyloidosis with renal insufficiency, the kidneys were either normal in size or somewhat enlarged. Renal amyloidosis may occasionally be associated with independent arteriolar nephrosclerosis. Albuminuria is a fairly constant observation in renal amyloidosis.

Archives of Dermatology and Syphilology, Chicago

29: 333-484 (March) 1934

Cutaneous Manifestations of Allergy. C. M. Williams, New York.—p. 333
LXVI. Lipids of the Skin: Influence of Some Factors on the Albino Rat. D. J. Kooyman, St. Louis.—p. 342.
Question of Bismuth Penetration of Nervous System: Report of Clinical and Laboratory Study. J. V. Klauder and H. Brown, Philadelphia.—p. 351.
*Epidermomycosis and Flatfoot. D. Lieberthal and E. P. Lieberthal, Chicago.—p. 356.
Urticaria: Etiologic Observations. J. G. Hopkins and B. M. Kesten, New York.—p. 358.
*Acute Interstitial Myocarditis: Report of Case Following a Severe Dermatitis Due to Sulphur Ointment. E. S. Maxwell and C. C. Barrett, Lexington, Ky.—p. 382.
Sarcoid of Boeck. L. Hollander and Clara R. Schlesinger, Pittsburgh.—p. 387.
Tuberculosis of the Skin: Clinical Report. J. E. Rauschkolb, Cleveland.—p. 398.
*Multiple Epitheliomas and Pigmentary Dermatosis in a Negro Boy. R. Hopkins and M. T. Van Studdiford, New Orleans.—p. 408.
Streptococcic Hypertrophic Gingivitis. A. R. Woodburne and P. Northrop, Grand Rapids, Mich.—p. 422.

Epidermomycosis and Flatfoot.—The Lieberthals noticed in a large series of cases of mycotic infection of the feet that a moderate to advanced degree of flatfoot was present also. Of their 195 patients, 90 per cent had flatfoot and 30 per cent also had hyperhidrosis. The authors believe that as a result of the changes of flatfoot the resistance of the skin itself is lowered and the soil thus prepared for the invasion and subsequent growth of the fungi in epidermomycosis. Ten advanced and five moderately advanced cases of vesiculopustular lesions on the soles as well as intertriginous changes, accompanied by flatfoot, responded more rapidly to the ordinary forms of treatment after orthopedic correction. Not only did the lesions of the skin clear up rapidly, but the hyperhidrosis was also materially influenced. In three cases it disappeared completely.

The rapid response of these resistant cases to the ordinary therapeutic measures following the correction of the foot deformity justifies the conclusion that orthopedic corrective measures are a therapeutic adjunct in the cases of fungous infection of the feet associated with flatfoot.

Acute Interstitial Myocarditis.—Maxwell and Barrett report a case of acute interstitial myocarditis in which there was an extensive infection of the skin and mucous membranes with Staphylococcus haemolyticus. Postmortem examination did not show any evidence of septicemia, so that if the myocarditis was related to the pyogenic infection it must have been through the absorption of bacterial toxins. The gross and microscopic appearance of the abdominal viscera supported this view. No case of acute interstitial myocarditis has ever been diagnosed before death; however, the authors believe that, with the picture of progressive myocardiac failure following a pyogenic infection of the skin and without septicemia, the cardiac lesion could be reasonably suspected.

Multiple Epitheliomas and Pigmentary Dermatosis.—Hopkins and Van Studdiford describe an instance of cutaneous epitheliomas of the face in a Negro, in which the clinical and histopathologic diagnosis was that of multiple squamous cell epitheliomas. A more generalized dermatosis is diagnosed as arsenical pigmentation on the evidence of the histopathologic picture and on the presence in the skin of arsenic trisulphide crystals. The distribution of the lesions, however, was in conformity with that of xeroderma pigmentosum. The epitheliomas of the face were a sequence of the arsenical pigmentation in this region and, it is assumed, were caused by deposits of arsenic. The fact that arsenic presumably carried by the blood stream to the skin and there deposited resulted in this case in the development of epitheliomas suggests the possibility that Negro racial immunity to cutaneous epitheliomas is due to protection from external and not from internal sources of irritation, and that the major part played by the pigment of the black skin, so far as immunity against epitheliomas is concerned, must be protection against actinic rays and similar natural external sources of irritation.

Archives of Neurology and Psychiatry, Chicago

31: 469-684 (March) 1934

Labyrinth and Cortex: Electrencephalogram of the Cortex in Stimulation of the Labyrinth. E. A. Spiegel, Philadelphia.—p. 469.
Use of Iodized Poppy Seed Oil in Differential Diagnosis Between Tumors of Conus Medullaris and of Cauda Equina. H. N. Harkins, Chicago.—p. 483.
Progressive Necrosis of the Spinal Cord. F. P. Moersch and J. W. Kernohan, Rochester, Minn.—p. 504.
Histologic Changes in the Brain in Cases of Fatal Injury to the Head: V. Changes in the Nerve Fibers. C. W. Rand and C. B. Courville, Los Angeles.—p. 527.
Photographic Study of Ocular Movements in Mental Disease. F. H. Couch and J. C. Fox Jr., New Haven, Conn.—p. 556.
*Treatment of Dementia Paralytica with Typhoid H Antigen Vaccine: Report of Twenty-Five Cases in Which Fever Therapy Combined with Administration of Tryparsamide Was Used. M. T. Schnitker, Philadelphia.—p. 579.
Sensory Threshold to Direct Current Stimulation in Schizophrenic and in Normal Subjects. P. E. Huston, Worcester, Mass.—p. 590.
Chemical Changes in the Blood Induced by Hyperpyrexial Baths. Helen Hopkins, Los Angeles.—p. 597.

Treatment of Dementia Paralytica with Typhoid H Antigen Vaccine.—Schnitker treated twenty-five dementia paralytica patients physically unsuitable for treatment with malaria, whole typhoid vaccine or diathermy with typhoid H antigen (flagellar) vaccine alone and in combination with tryparsamide. The symptomatic and serologic improvement obtained by this method compares favorably with results obtained with other forms of fever therapy. Typhoid H antigen vaccine is indicated for persons who cannot withstand the rigors of other forms of therapy because: (1) although the hyperpyrexia equals that obtained with whole typhoid vaccine, the concomitant illness is far less severe, (2) it does not involve superimposing a second (and perhaps lethal) infection on an already existing one, as with malaria, (3) it does not involve the risk of burns and renal damage, as with diathermy, (4) its contraindications are severe cardiorenal disease, active pulmonary disease, severe cachexia and acute infection with a rapid sedimentation rate, (5) its administration and control are simple and its use in the hands of the general practitioner, both in the hospital and in the home, is safe and (6) it has not, in the author's experience, been associated with complications or sequelae. More attention should be directed to the total hours of fever produced in a patient than to a definite number of paroxysms. Tryparsamide can be given at the height of the fever with better clinical results and no increase in the dangers of complications.

Archives of Ophthalmology, Chicago

11: 225-388 (Feb.) 1934

Color Photography of the Eye. H. M. Dekking, Nijmegen, Netherlands.—p. 225.
Prolonged Occlusion Test: Illustrative Cases. W. L. Hughes, New York.—p. 229.
Combined Treatment in Certain Diseases of the Eye. G. H. Burnham, Toronto.—p. 237.
Effect of Tryparsamide on the Eye: Experimental and Clinical Study and Report of Case. N. K. Lazar, Chicago.—p. 240.
Physiologic Lensless Spectacles. C. C. Guthrie, Pittsburgh.—p. 254.
Treatment of Retinal Detachment by Walker's Method of Electrocoagulation: Report of Cases. L. C. Peter, Philadelphia.—p. 262.
Eye Pad for Making Hot Applications. J. N. Evans, Brooklyn.—p. 268.
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Arch. of Physical Therapy, X-Ray, Radium, Chicago

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Use of Surgical Diathermy in Relief of Cases of Inoperable Carcinoma. R. B. Bettman, Chicago.—p. 80.
Surgical Diathermy of Carcinoma of the Rectum: Further Observations and End Results. A. A. Strauss, S. F. Strauss, R. A. Crawford and H. A. Strauss, Chicago.—p. 82.
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Archives of Surgery, Chicago

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Meckel's Diverticulum Containing Aberrant Pancreas. V. C. Hunt and H. T. S. Bonestell, Los Angeles.—p. 425.
*Meckel's Diverticulum: Report of Case of Hemorrhage in the Bowel Associated with a Meckel's Diverticulum That Presented an Adenoma Composed of Gastric and Duodenal Glands. R. N. Schullinger and A. P. Stout, New York.—p. 440.
Peptic Ulcer: IX. Chronic Lesions of the Duodenum Following Experimentally Produced Pyloric Dysfunction. C. B. Morton, University, Va.—p. 467.
*Significance of Anaerobic Organisms in Peritonitis Due to Liver Autolysis: Bacterial Flora of the Liver and Muscle of Normal Dogs. H. M. Trusler and J. R. Reeves, Indianapolis.—p. 479.
Tumors of the Parotid Gland. I. Stein and C. F. Geschickter, Baltimore.—p. 492.
*Complete Removal of Two Tumors of the Third Ventricle with Recovery. C. B. Masson, New York.—p. 527.
*Supraperiosteal and Subcostal Pneumolysis with Filling of Pectoral Muscles. J. Alexander, Ann Arbor, Mich.—p. 538.
Diurnal Incontinence in Women. J. T. Witherspoon, New Orleans.—p. 548.
Avulsion of Epiphysis of the Small Trochanter. D. King, Ann Arbor, Mich.—p. 561.
Intramural Extension of Gastric Carcinoma. A. Verbrugghen, Chicago.—p. 566.
Chronic Pancreatitis Associated with Peptic Ulcer. J. W. Hinton, New York.—p. 580.
Digestion of Bone by Larvae of Phormia Regina: Its Relationship to Bacteria. I. H. Maseritz, Baltimore.—p. 589.
Fifty-Second Report of Progress in Orthopedic Surgery. J. G. Kuhns, E. F. Cave, S. M. Roberts and J. S. Barr, Boston; J. A. Freiberg, Cincinnati; J. E. Milgram, New York; R. I. Stirling, Edinburgh, Scotland, and P. D. Wilson, Boston.—p. 608.

Meckel's Diverticulum.—Schullinger and Stout report a case of Meckel's diverticulum in which the mucosal surface near the tip was the site of a nonulcerated pedunculated adenoma composed of gastric and duodenal glands. The case emphasizes that extremely severe acute symptoms including abdominal pain and bleeding from the rectum, unmixed with mucus, may occur

in persons with Meckel's diverticulum without any evidence of invagination, intussusception or ulceration. Heterotopic tissue was present in the diverticulum, but the source of the bleeding could not be determined either at operation or microscopically. It is reasonable to suppose that it must have come from the diverticulum, since hemorrhage did not recur after its removal. Because their patient, together with other reported cases, exhibited symptoms similar to those recorded for the group who had bleeding associated with ulcer of a Meckel's diverticulum, the authors believe that the latter condition cannot be considered a clinical entity. The indication is to remove the diverticulum even though it may appear harmless, because the mortality is high after perforation or after acute pathologic processes set in. A person with a lesion of Meckel's diverticulum, especially if the lesion is a bleeding peptic ulcer, may pass from a state of relatively good health to one of acute illness, collapse and shock with amazing rapidity. Sudden severe pain in the lower part of the abdomen with rigidity, signs of diffusing peritonitis, fever and leukocytosis, especially in children, should lead one to suspect a perforated Meckel's diverticulum. Cryptic intestinal bleeding should always constrain one to suspect a Meckel's diverticulum as a possible source.

Anaerobic Organisms in Peritonitis Due to Liver Autolysis.—Trusler and Reeves attempted to ascertain whether toxic strains of Clostridium welchii regularly inhabit the liver of healthy dogs and if the same organisms are present and cause death in bodily autolysis of liver. They studied the livers of sixteen normal healthy dogs and the muscle tissue from six dogs. Toxic strains of C. welchii were not found. The livers of the sixteen dogs contained a strict anaerobic bacillus, thermophilic in its reaction to heat, a member of the genus Clostridium and of the metabolic group of non-sucrose-fermenting, putrefactive, gas-forming organisms. The muscles of five normal healthy dogs contained a less strict anaerobic bacillus, not thermophilic in heat reaction, a member of the genus Clostridium and of the metabolic group of sucrose-fermenting, putrefactive, gas-forming organisms. A sample of muscle from one dog was sterile. The organisms occupying the livers and muscles of the dogs studied do not produce an exotoxin. They are, in this respect, nonpathogenic. These organisms are all large gram-positive bacilli. Their morphology and gas production easily confuse them with pathogenic forms. On two occasions when large masses of liver were incubated, organisms were found which closely resembled C. welchii in morphology. They differ in sugar fermentation, form no exotoxin and were not pathogenic when injected in young broth cultures intramuscularly into guinea-pigs. Livers of fetal dogs are uniformly sterile.

Removal of Tumors of Third Ventricle.—Masson removed successfully the tumors of the third ventricle in two cases. Both were in the anterior part of the third ventricle. In retrospect, it appears to him that a much smaller bone flap would answer, for only a limited extent of the dural exposure was used in each instance. It does not matter, therefore, how wide a dural exposure is provided, since the tumor and its attachment to the third ventricle are just as deeply situated and cannot be drawn to the surface until freed. It is imperative that one work carefully at a distance. Irrespective of the size of the craniotomy, one finds oneself working at a distance from the root, and one has to depend on careful technic to be successful. If the lesion is totally extirpated, a decompression is not required, since the cause of the increased intracranial pressure has been removed.

Supraperiosteal and Subcostal Pneumonolysis.—Alexander describes the technic of supraperiosteal and subcostal pneumonolysis with a filling of the pectoral muscles. The procedure is chiefly indicated for cavernous tuberculous or nontuberculous lesions that lie between the clavicle and the level of the third rib anteriorly. The operation is performed under gas anesthesia with the patient in about a 15 degree Trendelenburg position. One was a man of 53 having arteriosclerosis with a foul nontuberculous abscess. After operation, improvement was rapid at first, then gradual; three years after operation the patient was apparently cured. On three of the six tuberculous patients the operation was done successfully as preliminary to thoracoplasty in order to displace a large cavity backward so that the thoracoplasty would have a better chance of completely closing it. One of the three remaining patients died as a result of the operation. Another patient for whom the operation was used independently was 56 years old and had arteriosclerosis, intestinal tuberculosis and an anal fistula, dyspnea, hemoptyses, fever and a rapid pulse. When discharged from the sanatorium seven months after operation, he had gained 20 pounds (9 Kg.), and a roentgenogram showed great clearing in the tuberculous infiltration and apparent disappearance of the cavity. The sputum was reduced to 70 cc. daily and was still positive for tubercle bacilli. The last patient, 24 years old, had had pulmonary tuberculosis for seven years. Thirteen months after operation he had gained 35 pounds (15.9 Kg.); his sputum was reduced to 10 cc. daily and was repeatedly negative for tubercle bacilli during the last four months.

Arkansas Medical Society Journal, Fort Smith

30: 203-224 (March) 1934

Transurethral Prostatic Resection. H. F. H. Jones and T. D. Brown, Little Rock.—p. 203.
Rôle of Radioactivity of Natural Spring Waters as a Therapeutic Agent. F. J. Scully, Hot Springs National Park.—p. 206.
Blood Stream Infection. H. E. Mobley, Morrilton.—p. 215.

California and Western Medicine, San Francisco

40: 145-216 (March) 1934

Carotid Sinus: Its Controlling Influence on Circulation and Respiration. L. Dautrebande, Liége, Belgium.—p. 145.
Stone in the Kidney. B. W. Wright, Los Angeles.—p. 148.
Dermosubcutaneous Flaps: Their Management in Reconstruction Surgery. G. B. O'Connor and G. W. Pierce, San Francisco.—p. 151.
Sinus Disease in Children. Rea Ashley, San Francisco.—p. 156.
Resistance to Eating Among Preschool Children. H. R. Stolz, Berkeley.—p. 159.
Termination of Pregnancy in Eclampsia. D. G. Tollefson, Los Angeles.—p. 163.
Polyneuritis Associated with Vomiting of Pregnancy. M. Gerstle Jr. and S. P. Lucia, San Francisco.—p. 167.
Carcinoma of Rectum in a Young Man of Seventeen Years. T. C. Lawson, Oakland.—p. 171.
Facial Nerve Damage: Its Repair. H. B. Graham, San Francisco.—p. 174.
Neurosyphilis: Its Treatment with Hyperpyrexia Produced by Diathermy. W. Beerman, M. Hirschfeld, N. N. Epstein and S. B. Paul, San Francisco.—p. 177.

Canadian Medical Association Journal, Montreal

30: 237-352 (March) 1934

Outlook for Overcoming Pneumonia. R. Cole, New York.—p. 237.
Clinical Studies with Urea Clearance Test. L. G. Bell, C. R. Gilmour and A. T. Cameron, Winnipeg, Manit.—p. 246.
Pulmonary Embolism. T. H. Belt, Toronto.—p. 253.
*Bilirubin Formation and the Reticulo-Endothelial System: I. Kupffer Cells and Their Relation to the Reticulo-Endothelial System. R. Gottlieb, Montreal.—p. 256.
Voluminous Orbitocranial Osteoma: Consecutive Cerebral Abscess of Nasal Origin. J. N. Roy, Montreal.—p. 259.
Mesenteric Cysts: Report of Case. D. Ross and C. I. Mead, Montreal.—p. 262.
Idiopathic Spontaneous Pneumothorax in Apparently Healthy Adults. C. H. Vrooman, Vancouver, B. C.—p. 265.
Angina Pectoris: Clinical Classification. D. M. Baltzan, Saskatoon, Sask.—p. 269.
Plea for the Earlier Diagnosis of Pernicious Anemia, with Quotation of Cases. A. G. McGhie, Hamilton, Ont.—p. 274.
*Diabetic Coma Refractory to Insulin. H. C. Jamieson, Edmonton, Alta.—p. 277.
Early Diagnosis of Cancer of Larynx. G. E. Tremble, Montreal.—p. 280.
Early Diagnosis of Carcinoma of Lung. J. C. Meakins, Montreal.—p. 283.
Ménière's Disease: Report of Case. J. E. Whitworth, Montreal.—p. 285.
Rôle of Masturbation Conflict in Development of Psychoneurotic Symptoms. B. Silverman, Montreal.—p. 287.
Clinical Observations on Kidney Stone Cases. G. S. Foulds and J. B. Maxwell, Toronto.—p. 290.
*Method of Reducing Supracondylar Fractures of the Humerus. D. S. Macnab, Calgary, Alta.—p. 293.

Bilirubin Formation and the Reticulo-Endothelial System.—Gottlieb made a comparative study of the Kupffer cells with other cells of the reticulo-endothelial system in rabbits, guinea-pigs and rats. The rabbits received daily injections of 10 cc. of a 2.5 per cent lithium carmine suspension for from five to ten consecutive days, the guinea-pigs 5 cc. for

five days and the rats from 1 to 2 cc. for from three to five days. All the injections were given intraperitoneally. The animals were killed by coal gas and sections made of the organs. With the exception of the bone marrow, which was fixed in Zenker's fluid, the tissues were hardened in formaldehyde, passed through alcohol and toluene, and petrolatum sections were cut. The carmine sections were slightly counterstained with hematoxylin and the trypan blue sections with bismarck brown. The author agrees with Zimmermann and others that the Kupffer cells are true independent cells which are suspended in the liver in such a manner that they are well surrounded by the blood stream. They are nucleated cells attached to the wall by protoplasmic processes only; functionally, they are able to store intravitally like all the other cells of the reticuloendothelial system. Even if the existence of the reticuloendothelial system as such should be called in question, there remains the fact that a number of groups of cells of mesodermal origin are capable of storing carmine intravitally. It does not appear reasonable to exclude the Kupffer cells alone and deny their cell nature, as it is assumed by Pfuhl and his followers. The proliferation of Kupffer cells after splenectomy is another fact of importance. One could hardly expect mere thickenings of the endothelial wall to proliferate on account of an increased functional demand.

Diabetic Coma Refractory to Insulin.—Jamieson reports the case of a woman of 58 having diabetes, who was admitted to the hospital in deep coma after an abstinence from food and insulin for eighteen hours. There had been repeated vomiting during this period. Three years before she had been under the author's care, having then suffered for three years from diabetes. She left the hospital on a low fat, high carbohydrate maintenance diet, with 45 units of insulin daily. She had not reported in the interval, but her husband said that she had remained in good health as long as she adhered to her diet and insulin. A trip to the city resulted in a visit to an irregular practitioner who said he could do nothing for her until she stopped taking insulin. This resulted in coma. There was little change in the blood sugar throughout the duration of the coma. The carbon dioxide combining power rose from 11 volumes per cent to 37.5, but even with continued excessive dosage of insulin it fell again. The urine was never free of sugar or ketone bodies. No evidence of sepsis was found at necropsy. In fourteen hours 1,140 units of insulin was given. Histologic sections of the pancreas showed marked diminution in the number of islands of Langerhans. Those present were small and the cells atrophic in appearance. The case seems to belong to the fourth group as outlined by Thannhauser and Fuld.

Reducing Supracondylar Fractures of the Humerus.—Macnab uses the following method in reducing supracondylar fractures of the humerus: The arm is grasped by the operator with both hands, the thumbs being placed vertically on the posterior surface at the line of fracture. The forearm under moderate extension is hyperextended by the assistant over the thumbs of the operator, at the same time being moderately abducted. The operator gradually works the lower fragments down until the fracture lines approximate as nearly as possible. The assistant then, increasing the extension, flexes the forearm, carrying it through an arc of a circle that brings it well inside the shoulder, the operator in the meantime retaining the alinement with his thumbs. The radial artery is palpated to ascertain the presence of a pulse. A small piece of cotton is placed in the angle of the elbow and adhesive straps are brought around the arm and forearm to hold a hyperflexed position. A roentgenogram is taken immediately after reduction. If the fracture is found to be satisfactorily reduced, the arm is held in a sling and the hand fastened to a collar around the neck. At the end of two weeks the straps are cut and a little passive motion is started. Radiant heat and gentle massage are advised at this time. The straps are reapplied for another week. At the end of three weeks the dressing is removed and the patient is encouraged to move the arm voluntarily. When the patient is not exercising under supervision, the hand is fastened to the collar. At the end of the fourth week, weights may be carried and more vigorous methods adopted to secure extension of the forearm.

Colorado Medicine, Denver

31: 81-112 (March) 1934

Recurrent Dislocation of the Shoulder. J. S. Normal, Pueblo.—p. 83.
Posttraumatic Osteoporosis of Carpal Bones. D. Prey and J. M. Foster Jr., Denver.—p. 86.
Protection of Employees Against Infection in Tuberculosis Hospitals and Sanatoriums. I. D. Bronfin, Denver.—p. 90.
Amebic Dysentery: Diagnosis and Treatment. P. W. Brown, Rochester, Minn.—p. 96.
Relationship of Pharmacy to Medical Economics. P. G. Stodghill, Denver.—p. 100.

Florida Medical Association Journal, Jacksonville

20: 379-428 (March) 1934

Some Problems of Medicine. H. C. Dozier, Ocala.—p. 389.
Common Cold: Its Complications and Sequelae. C. G. Coakley, New York.—p. 393.
Intracranial Complications from Apparently Trivial Sources: Case Reports. S. A. Shoemaker, Orlando.—p. 399.

Georgia Medical Association Journal, Atlanta

23: 83-124 (March) 1934

Aspiration and Pneumothorax Method of Treating Empyema. T. Harrold, Macon.—p. 83.
Neurosyphilis: Effect of Modern Treatment on Its Incidence. J. W. Brittingham, Augusta.—p. 87.
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Orchitis Due to Mumps Without Involvement of Parotid, Submaxillary or Sublingual Glands: Report of Case. G. J. Dillard, Columbus. —p. 95.
Gastric Mucin in Treatment of Peptic Ulcer. E. F. Wahl, Thomasville. —p. 97.
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Adequate Medical Care. W. D. Gholston, Danielsville.—p. 102.
Relation of Physiology to Clinical Medicine. O. S. Gibbs, Washington, D. C.—p. 107.

Johns Hopkins Hospital Bulletin, Baltimore

54: 145-210 (March) 1934

Agglutination of Hemolytic Streptococci by Plasma and Fibrinogen: Comparison of Phenomenon to Serologic Reactions with the Same Organisms. W. S. Tillett and R. L. Garner, Baltimore.—p. 145.
The Hypophysis of the Human Castrate. J. H. Biggart, Baltimore.—p. 157.
Actinomycosis Graminis. J. H. Biggart, Baltimore.—p. 163.
Experimental Yaws: II. Comparison of Infection with Experimental Syphilis. T. B. Turner and A. M. Chesney, Baltimore. —p. 174.
Investigation of Some Effects of Pregnancy Noted Six Weeks and One Year After Delivery. C. H. Peckham, Baltimore.—p. 186.
*Effect of Hemisection of Cochlear Branch of the Human Auditory Nerve: Preliminary Report. W. E. Dandy, Baltimore.—p. 268.

Hemisection of Cochlear Branch of Auditory Nerve.—Dandy cites a case in which the audiogram thirteen days after hemisection of the sensory root of the fifth nerve showed that all the tones up to 6,144 were almost exactly the same as before the operation; only the higher tones, 8,192 and 12,286, were lost. The highest tone, 16,384, was absent both before and after the operation. An audiogram made the next day showed identical results. The immediate result, therefore, following section of one half, at least, of the cochlear branch of the acoustic nerve is loss of only two of the very high tones. This observation is seemingly in complete harmony with the results of partial division of the trigeminal and optic nerves.

Journal of Allergy, St. Louis

5: 221-330 (March) 1934

Studies on Relation of Adrenal Glands to Allergic Phenomena: I. Output of Epinephrine During Anaphylactic Shock in Dogs. M. B. Cohen, J. A. Rudolph, P. Wasserman and J. M. Rogoff, Cleveland.—p. 221.
Intravenous Pollen Therapy. M. R. Lichtenstein, Chicago.—p. 230.
Relation of Papular Urticaria and Prurigo Mitis to Allergy. A. Walzer and M. Grolnick, Brooklyn.—p. 240.
Active Sensitization in Human Beings. M. Brunner, Brooklyn.—p. 257.
Studies of Anaphylactic Antibody: Parts I, II and III. O. Swineford Jr., University, Va.—p. 265.
Comparison of Pulmonary and Dermal Sensitivity to Inhaled Substances. F. A. Stevens, New York.—p. 285.
Monilia and Trichophyton Extracts: Their Combined Use in Eczematous Ringworm (Dermatophytosis and Dermatophytids); Phyllis S. Kerr, Frances Pascher and Marion B. Sulzberger, New York.—p. 288.
Soy Bean as Possible Important Source of Allergy. W. W. Duke, Kansas City, Mo.—p. 300.
Active Transmission of Urticaria by Blood Transfusion. M. K. Tedstrom, Santa Ana, Calif.—p. 303.
Pollen Content of Air in Toronto, Canada, 1932. Florence LaRush, Toronto.—p. 306.

Journal of Bacteriology, Baltimore

27: 219-324 (March) 1934

Irradiation of Plant Viruses and of Micro-Organisms with Monochromatic Light: I. The Virus of Typical Tobacco Mosaic and Serratia Marcescens as Influenced by Ultraviolet and Visible Light. B. M. Duggar and A. Hollaender, Madison, Wis.—p. 219.
Id.: Resistance to Ultraviolet Radiation of a Plant Virus as Contrasted with Vegetative and Spore Stages of Certain Bacteria. B. M. Duggar and A. Hollaender, Madison, Wis.—p. 241.
Morphologic Relationships of Soil Microbes. S. C. Vandecaveye and B. R. Villanueva, Pullman, Wash.—p. 257.
Studies on Pneumococcus Variation: I. Variants Characterized by Rapid Lysis and Absence of Normal Growth Under Routine Method of Cultivation. M. D. Eaton, Boston.—p. 271.
Studies on Leukocyte Content of Milk Drawn from Brucella Abortus Infected Udders. C. C. Prouty, Pullman, Wash.—p. 293.
Physiologic Youth of a Bacterial Culture as Evidenced by Cell Metabolism. H. H. Walker, C.-E. A. Winslow, Evelyn Huntington and M. Grace Mooney, New Haven, Conn.—p. 303.

Journal of Biological Chemistry, Baltimore

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Isolation and Detection of Bilirubin. C. E. May, Ruth Martindale and W. F. Boyd, Bloomington, Ind.—p. 255.
Calcium Content of Aqueous and Vitreous Humors and Serum. P. W. Salit, Iowa City.—p. 275.
Glyoxalase: I. Applicability of Manometric Method to Study of Glyoxalase. Muriel E. Platt and E. F. Schroeder, Philadelphia.—p. 281.
Basic Amino Acids of Serum Proteins: II. Effect of Heating to Fifty-Eight Degrees. R. J. Block, New Haven, Conn.—p. 343.
Preparation of a Crystalline Globulin from Albumin Fraction of Cow's Milk. A. H. Palmer, New York.—p. 359.
Specific Gravity of Synthetic Solutions of Serum Albumin and Serum Globulin. R. L. Nugent and L. W. Towle, Tucson, Ariz.—p. 395.
Contribution to Chemistry of Lactobacillus Acidophilus: II. Composition of Neutral Fat. J. A. Crowder and R. J. Anderson, New Haven, Conn.—p. 399.
Iodometric Determination of Cystine in the Urine. R. W. Virtue and H. B. Lewis, Ann Arbor, Mich.—p. 415.
Vitamin E: I. Some Chemical and Physiologic Properties. H. S. Olcott and H. A. Mattill, Iowa City.—p. 423.

Journal of Clinical Investigation, New York

13: 193-364 (March) 1934

*Digestion of Beef Proteins in the Human Stomach. E. J. Maltby, Toronto.—p. 193.
*Cutaneous Reactions in Diagnosis of Undulant Fever. J. D. Goldstein, Rochester, N. Y.—p. 209.
Distribution of Blood Phosphorus After Suppression of Renal Function. Alta Ashley and G. M. Guest, Cincinnati.—p. 219.
Lipoids of Serum in Diabetic Acidosis. Evelyn B. Man and J. P. Peters, New Haven, Conn.—p. 237.
*Kidney Function and Blood Pressure. H. C. A. Lassen and E. Husfeldt, Copenhagen, Denmark.—p. 263.
Measurement of Intrapleural Pressure in Man and Its Significance. R. V. Christie and C. A. McIntosh, Montreal.—p. 279.
Elastic Properties of Emphysematous Lung and Their Clinical Significance. R. V. Christie, Montreal.—p. 295.
Intrapleural Pressure in Congestive Heart Failure and Its Clinical Significance. R. V. Christie and J. C. Meakins, Montreal.—p. 323.
Lipemia of Pregnancy. E. M. Boyd, Rochester, N. Y.—p. 347.

Digestion of Beef Proteins in the Human Stomach.—Maltby studied the digestion of protein in the human stomach and reports the quantitative fractional analyses of the gastric digests. Considerable peptic hydrolysis of meat can occur in the stomach in a relatively short time. There is a wide variation in the extent of hydrolysis of beef muscle protein in the normal individual. This variation occurs not only in different normal subjects but also in the same person. Subjects having pernicious anemia accomplish little or no gastric digestion of meat. No pepsin was demonstrated in the gastric contents of achlorhydric cases without pernicious anemia or of patients suffering from pernicious anemia. Achlorhydric cases without pernicious anemia showed a small amount of gastric digestion. A somewhat smaller amount was found in pernicious anemia cases. Pepsin secretion and acid secretion appeared to parallel each other in amount. The p_H of the gastric contents in persons having apparently normal gastro-intestinal tracts ranges from 1.23 to 6.63. No pernicious anemia patients had a p_H below 5.75 for the gastric contents. The titratable acidity ranged from 151 cc. of tenth normal acid per hundred cubic centimeters of gastric contents to zero, varying in individual cases. Bile was present in the gastric contents in measurable amounts in about 25 per cent of the normal subjects tested and in 18 per cent of the subjects with pernicious anemia. These conclusions are based on observations of gastric digestion of meals consisting only of meat.

Cutaneous Reactions in Diagnosis of Undulant Fever.—Goldstein tested the endermic reactions of 253 patients by the intradermal injection of whole Alcaligenes abortus organisms killed by heat. Twenty-six, or 10.3 per cent, of the group reacted positively. The reactions of ninety-two patients were similarly tested with Alcaligenes abortus organisms which had been extracted with alcohol and ether. Nine, or 9.6 per cent, gave positive reactions to the "fat-free" antigen. The "fat-free" antigen produced fewer general reactions and less severe local reactions than did the "heat-killed" vaccine. It did not materially increase the antiabortus agglutinin titer of the serum. The author recommends the endermic reaction for use as a supplementary procedure for the diagnosis of undulant fever, not only in those patients who have an unexplained fever but also in those afebrile persons without antiabortus agglutinins in their serum who may be suspected of having symptoms referable to an Alcaligenes infection.

Kidney Function and Blood Pressure.—Lassen and Husfeldt followed the course of the glomerular filtration ("creatinine clearance," Rehberg) in four young men, cardiorenally healthy, while they were under spinal anesthesia, during which the fall of blood pressure was not compensated. They observed that: 1. During the rather considerable fall of blood pressure which appeared when the effect of the anesthesia was at its height, the glomerular filtration decreased markedly and to a degree that corresponded fairly well with the fall of blood pressure. 2. At the same time, the concentration index increased significantly and remained high, or rose even further during the subsequent gradual rise of blood pressure. Thus the tubular function was normal, as far as the reabsorption of water is concerned, or even hypernormal at the same time that the effect of the spinal anesthesia was at its height and the filtration was lowered. 3. During the fall of blood pressure there was an enormous decrease in the volume of urine, partly on account of considerable reabsorption of water in the tubules, partly on account of the lowered filtration in the glomeruli. In three of the authors' control experiments the course of the glomerular filtration was followed under spinal anesthesia during which the fall of the blood pressure was counteracted by injection of ephetonine or ephetonine and caffeine. Ephetonine (or ephetonine and caffeine) was able under optimally effective spinal anesthesia to maintain at the same time both a normal blood pressure and a normal glomerular function. The function of the tubules was not affected by this. The relation that was found between the blood pressure and the kidney function under the experimental conditions can be readily explained in accordance with the filtration reabsorption theory.

Journal of Experimental Medicine, New York

59: 251-392 (March 1) 1934

Blood Plasma Protein Regeneration Controlled by Diet: I. Liver and Casein as Potent Diet Factors. R. L. Holman, E. B. Mahoney and G. H. Whipple, Rochester, N. Y.—p. 251.
Blood Plasma Protein Given by Vein Utilized in Body Metabolism: II. Dynamic Equilibrium Between Plasma and Tissue Proteins. R. L. Holman, E. B. Mahoney and G. H. Whipple, Rochester, N. Y.—p. 269.
Perivascular Reactions in Lung and Liver Following Intravenous Injection of Streptococci into Previously Sensitized Animals. C. H. Hitchcock, Syracuse, N. Y.; A. R. Camero, Philadelphia, and H. F. Swift, New York.—p. 283.
Single Cell Inoculations with Treponema Pallidum. C. S. Thomas and H. J. Morgan, Nashville, Tenn.—p. 297.
*Rift Valley Fever in Man: Report of Fatal Laboratory Infection Complicated by Thrombophlebitis. F. F. Schwentker and T. M. Rivers, New York.—p. 305.
Vitamin B_1 and B_2 G Content of Liver Extract and Brewers' Yeast Concentrate. D. K. Miller and C. P. Rhoads, New York.—p. 315.
Effect of Hemoglobin Injections on Erythropoiesis and Erythrocyte Size in Rabbits Rendered Anemic by Bleeding. D. K. Miller and C. P. Rhoads, New York.—p. 333.
Studies on Experimental Hypertension: I. Production of Persistent Elevation of Systolic Blood Pressure by Means of Renal Ischemia. H. Goldblatt, J. Lynch, R. F. Hanzal and W. W. Summerville, Cleveland.—p. 347.
Bacterial Growth and Multiplication as Disclosed by Micromotion Pictures. R. W. G. Wyckoff, New York.—p. 381.

Rift Valley Fever.—Schwentker and Rivers report a case of laboratory infection of Rift Valley fever which terminated in death. The course of the disease was characteristic with the exception that it was complicated by thrombophlebitis, the patient dying from a pulmonary embolus. The phlebitis, which

appeared during convalescence, was an unexpected complication. It seems probable that should the number of cases of Rift Valley fever increase, phlebitis will again be seen as a complication in a certain proportion of them.

Journal of General Physiology, Baltimore

17: 487-628 (March 20) 1934

Time Curve of Facet Determination in an Ultrabar Stock of Drosophila Melanogaster. A. H. Hersh, Cleveland.—p. 487.

Reversible Inactivation of Bacteriophage by Bichloride of Mercury. A. P. Krueger and D. M. Baldwin, Berkeley, Calif.—p. 499.

Kinetics of Penetration: VIII. Temporary Accumulation. W. J. V. Osterhout and S. E. Kamerling, New York.—p. 507.

Visual Acuity and Intensity Discrimination of Drosophila. S. Hecht and G. Wald, New York.—p. 517.

Guaiacol Solutions: I. Electrical Conductivity of Sodium and Potassium Guaiacolates in Guaiacol. T. Shedlovsky and H. H. Uhlig, New York.—p. 549.

Id.: II. Distribution of Sodium and Potassium Guaiacolates Between Guaiacol and Water. T. Shedlovsky and H. H. Uhlig, New York. —p. 563.

Influence of Death Criteria on X-Ray Survival Curves of Fungus, Neurospora. F. M. Uber and D. R. Goddard, Berkeley, Calif.—p. 577.

Inactivation of Crystalline Trypsin. M. Kunitz and J. H. Northrop, Princeton, N. J.—p. 591.

Norris' Theory for the Shape of the Mammalian Erythrocyte. E. Ponder, New York.—p. 617.

Journal of Immunology, Baltimore

26: 161-246 (March) 1934

Study of "Smooth" and "Rough" Forms of Typhoid Bacillus in Relation to Prophylactic Vaccination and Immunity in Typhoid Fever. F. Maltaner.—p. 161.

Complement Fixation, Precipitin, Adhesion, Mercuric Chloride and Wassermann Tests in Equine Trypanosomiasis of Panama (Murrina). W. H. Taliaferro and Lucy Graves Taliaferro.—p. 193.

New Heterophile Antigen Common to Avian Erythrocytes and Some Varieties of Genus Pasteurella: Its Significance in Classification of Birds. L. Buchbinder, with assistance of W. Rubin, New York.—p. 215.

Pneumococcus Leukocidin. Florence Oram, New York.—p. 233.

Journal of Lab. and Clinical Medicine, St. Louis

19: 567-682 (March) 1934

The Combined Effects of Bile Salts and Oleic Acid on Choleresis. F. W. Co-Tui, New York.—p. 567.

Relative Effects of Diathermy and Infection on Plasma Proteins, Plasma Viscosity and Suspension Stability of the Blood in Dogs. J. K. Moen, Grace Medes and I. Chalek, Minneapolis.—p. 571.

Destruction of Pyogenic Bacteria in Alimentary Tract of Surgical Maggots Implanted in Infected Wounds. W. Robinson and V. H. Norwood, Washington, D. C.—p. 581.

Benign Adenoma of Sweat Glands. E. Birchwood, Chicago.—p. 586.

Intracutaneous Reactions Induced in Guinea-Pigs Inoculated with Brucella Abortus: Preliminary Report. H. Gladys Ducey and N. Korologos, New York.—p. 589.

Spectrophotometric Investigation and Determination of Bilirubin, with Consideration of Oxyhemoglobin and Its Effect on Estimation of Bilirubin. G. E. Davis and C. Sheard, Rochester, Minn.—p. 593.

Comparison of Blood Sugar Curves When Glucose Is Given Orally and Intraduodenally. Elizabeth J. Magers, Poughkeepsie, N. Y.—p. 608.

Filiptic Red Blood Cells in Man: Report of Eleven Cases. Sarah H. McCarty, Birmingham, Ala.—p. 612.

Studies in Serology of Syphilis: XIII. Use of Same Antigen for Wassermann Reaction and Author's Flocculation Test: Recommended Wassermann Technic. H. Eagle, Baltimore.—p. 621.

Probable Unusual Case of Hodgkin's Disease. D. C. Beaver and W. R. Johnson, Rochester, Minn.—p. 625.

Partition of Potassium between Serum and Corpuscles in Health and Disease. W. S. Hoffman and H. R. D. Jacobs, Chicago.—p. 633.

Schilling Differential Blood Count in Tropical Diseases: Study of Seven Hundred and Ten Cases, with Especial Reference to Malaria. Pauline Beregoff, Colombia, South America.—p. 644.

Journal of Nervous and Mental Disease, New York

79: 249-376 (March) 1934

Parent-Child Relationship in Schizophrenia: I. Over-Protection-Rejection. J. Kasanin, Elizabeth Knight and Priscilla Sage, Howard, R. I.—p. 249.

*Lecithin Treatment of Some Multiple Sclerosis Syndromes. M. H. Weinberg, Pittsburgh.—p. 264.

Influence of Water on Bodily Increase and on the Origin of Goiters and Insufficient Thyroid Functions: Second Communication: Brief Summary. R. Colella, Palermo, Italy.—p. 283.

*Narcosustained Therapy with Diallylbarbituric Acid in Psychiatry. A. B. Magnus, Chicago.—p. 286.

A Few Remarks on Brain Function. G. Vercellini, Fresno, Calif.—p. 301.

Lecithin in Treatment of Multiple Sclerosis.—Weinberg treated twelve cases of multiple sclerosis with intraspinal injections of lecithin in accordance with the method of Minnea and Dragomir. Ten of the cases have been carefully studied before and after treatment. Nine of the ten showed greater or lesser improvement. Among these were several severe cases. The method is harmless, though rather severe on the patients in certain respects. In its entirety it consists of intraspinal lecithin injections, the administration of cod liver oil over long periods of time, and the administration of quinine hydrochloride. The theoretical grounds for the success of the treatment from the author's standpoint are that lecithin neutralizes the lipolytic substance present in the spinal fluid, and he believes that the results are sufficiently good to justify its further use.

Sustained Sleep Therapy in Psychiatry.—Magnus presents a study of thirty-eight cases of mental disorder in which eighty-five treatments of sustained sleep therapy were given for a period of nearly four years. He found that sustained sleep therapy is a valuable method in manic-depressive psychosis, in certain types of schizophrenia and in psychoneurosis. Of the other groups, too few cases were available. The method that he employed was a modification of the one used in the Burgholzli clinic, consisting of administering diallylbarbituric acid rectally for a period of about ten days. In the prenarcotic stage, diallylbarbituric acid is given by mouth and occasionally intramuscularly when indicated. During the narcotic stage, morphine-scopolamine is given on the third day of the treatment and continued thereafter now and then, to lessen the possibilities of acquiring a tolerance to diallylbarbituric acid. Narcosustained therapy is not without danger. The dangers are lessened by carefully eliminating contraindications, by maintaining a light state of sleep and by employing a specially trained nursing personnel. The quality of sleep has no bearing on the ultimate clinical outcome, lightly narcotized patients with frequent periods of wakefulness having shown equally good results. In the postnarcotic stage lasting for three days or more the patient is conscious but his memory for recent events remains clouded and retention is poor. Situational conflicts are often clearly revealed and confabulations are not infrequent. Most patients show beneficial effects in some manner. Long standing deteriorated cases respond slightly, if at all. Among the improved, some are able to resume their former occupations, at least in part, outside the institution. Involutional cases responded poorly.

Journal of Nutrition, Philadelphia

7: 1-116 (Jan. 10) 1934

Biologic Value of Rations Containing Fish Meal. J. L. St. John, J. S. Carver, O. Johnson, S. A. Moore and H. Gerritz, Pullman, Wash. —p. 13.

Vitamin B and Vitamin G Content of Bosc Pears: Use of Munsell Method of Assaying Foods for Vitamin G. Ruth Douglass, Mae Halloway, Jessamine C. Williams and Alta Garrison, Eugene, Ore. —p. 27.

Fat Soluble Vitamins: XXXV. Ophthalmogenic Properties of Certain Rations Low in Vitamin A. C. Baumann and H. Steenbock, Madison, Wis.—p. 41.

Effect of Acid Ash and Alkaline Ash Foodstuffs on Acid-Base Equilibrium of Man. F. Bischoff, W. D. Sansum, M. Louisa Long and Margaret M. Dewar, Santa Barbara, Calif.—p. 51.

Some Factors Influencing Nitrogen Economy During Pregnancy. Callie Mae Coons and Gladys B. Marshall, Stillwater, Okla.—p. 67.

Iron Content of Foods Used in Municipal Hospital. V. Toscani and P. Reznikoff, New York.—p. 79.

Protein, Calcium and Phosphorus Intakes of College Women as Indicated by Nitrogen, Calcium and Phosphorus Outputs. M. M. Kramer, H. F. Evers, M. G. Fletcher and D. I. Gallemore, Manhattan, Kan.—p. 89.

Further Experiments with Cataract in Albino Rats Resulting from Withdrawal of Vitamin G (B_2) from the Diet. P. L. Day and W. C. Langston, Little Rock, Ark.—p. 97.

Relation Between Dehydration and Insensible Loss of Water. L. H. Newburgh and Margaret Woodwell Johnston, Ann Arbor, Mich.—p. 107.

7: 117-250 (Feb. 10) 1934

Behavior of Rats of Different Ages on Vitamin G Deficient Diet. Esther Peterson Daniel and Hazel E. Munsell, Washington, D. C.—p. 117.

Studies in Human Physiology: V. Urine Chemistry: Comparison of Twenty-Four-Hour and Short Period Basal Excretion, Correlations Between Urine Constituents and Menstrual and Seasonal Variation. G. W. Pucher, F. R. Griffith Jr., Katherine A. Brownell, Jennie D. Klein and Mable E. Carmer, Buffalo.—p. 131.

Id.: VI. Variations in Blood Chemistry Over Long Periods of Time, Including Those Characteristic of Menstruation: G. W. Pucher, F. R. Griffith Jr., Katherine A. Brownell, Jennie D. Klein and Mable E. Carmer, Buffalo.—p. 169.

Nutritive Value of Animal Tissues in Growth, Reproduction and Lactation: I. Alcohol-Extracted Beef Liver. H. G. Smith and W. H. Seegers, Iowa City.—p. 195.

Id.: II. Presence of New Dietary Principle in Liver. H. G. Smith and W. H. Seegers, Iowa City.—p. 209.
*Iron Metabolism Studies in Normal Subject and in a Polycythemic Patient. P. Reznikoff, V. Toscani and Ruth Fullarton, New York. —p. 221.
Human Milk Studies: XII. Vitamin B and Vitamin G Content Before and During Maternal Consumption of Yeast. Eva G. Donelson and Icie G. Macy, Detroit.—p. 231.

Iron Metabolism.—Reznikoff and his associates observed that a normal subject stored iron when placed on an intake of 26 mg. daily and was in balance when on an intake of 10 mg. before any therapy was started. A parenteral liver extract, which is potent in causing a remission in pernicious anemia, appeared to cause a retention of iron when the subject was taking 10 mg., and an increase in iron storage when he was taking 17 mg. When he was put on a high iron intake, approximately 80 mg., the administration of parenteral liver extract was followed by a marked increase of iron excretion. Copper sulphate seemed to decrease the iron loss. The administration of a liver fraction, supposedly potent in secondary anemia, was followed by a retention of iron above that obtained when iron in quantities present in the liver fraction alone was given. The administration of massive doses of iron (2 Gm.) gave a marked retention of iron. During a remission stage a polycythemic patient was on a slightly positive iron balance when his intake varied from 14 to 18 mg. Even with a decrease of 50 per cent of his blood following phenylhydrazine, no marked increase of iron excretion was obtained. This suggests that the great bulk of iron so liberated is stored in the body. Iron excretion in the urine is little and remarkably constant and cannot be increased by any method tried in these experiments. The amount of iron excreted per gram of dried stool is remarkably constant except when large amounts of iron are given. The red blood cell count and hemoglobin values had only an indirect relationship to iron intake and therapy in the normal or polycythemic subject because of the intermediation of the iron storage depots.

Journal of Pediatrics, St. Louis

4: 295-430 (March) 1934

Obesity in Children. N. K. Nixon, Los Angeles.—p. 295.
Nonspecific Infectious Granuloma and Carcinoid of the Appendix: Report of Case. J. Ireland, Chicago.—p. 307.
Insulin in Undernourished Nondiabetic Children: Attempt to Induce Gain in Weight. L. S. Radwin and S. S. Brown, Brooklyn.—p. 315.
Fatigue in School Children. C. G. Kerley, New York.—p. 322.
Use of Oxygen in Care of Feeble Premature Babies. W. P. Buffum and G. F. Conde, Providence, R. I.—p. 326.
Serum Treatment of Pneumonia in Children. Camille Keresztúri and J. Hauptman, New York.—p. 331.
Calcinosis Universalis and Dermatomyositis. C. C. Rudolph, St. Petersburg, Fla.—p. 342.
*Achondroplasia in a Twin. E. L. Benjamin and A. Brookner, New York.—p. 352.
Effect of Small Quantities of Breast Milk, Liver Extract, Iron and Copper, Respectively and in Combinations, on the Iron Balance of Artificially Fed Infants. S. Maurer, J. Greengard, W. L. Curtis and Cessa Klüver, Chicago.—p. 356.
Constipation in Breast-Fed Infants Caused by Anorectal Fissure: Report of Two Cases. D. F. Cathcart, Atlanta, Ga.—p. 366.
Renal Rickets. G. B. Bader, New York.—p. 368.
Congenital Heart Block, with a Résumé of Literature to Date: Report of Three Cases. L. Hays, Ann Arbor, Mich.—p. 380.
Lymphangiectasis with Chylorrhea. H. G. Poncher and T. P. Saltiel, Chicago.—p. 387.
*Diagnostic Tuberculin Reaction: Evaluation of Total Protein Tuberculin (Seibert) and Dermotubin (Löwenstein). J. Greengard and S. J. Nichamin, Chicago.—p. 393.
Brucella Infection in Children: Agglutination Reactions and Intracutaneous Tests. A. McBryde, N. C. Daniel and M. A. Poston, Durham, N. C.—p. 401.

Achondroplasia in a Twin.—Benjamin and Brookner present a case of achondroplasia occurring in a twin. It is difficult sometimes, in the early months of infancy, especially in an obese child, to make a diagnosis of micromelia, the characteristic feature of achondroplasia. In the authors' case the child was seen at 10 months and was presented at the clinic with its normal twin. The general puffed or bloated appearance of the child with its unusually large head made one think of cretinism. The short extremities, the disproportion between the trunk and the extremities and the roentgen observations leave no doubt as to the diagnosis of achondroplasia.

Diagnostic Tuberculin Reaction.—Greengard and Nichamin observed that the intradermal reaction is best suited for routine hospital use and should supplant other methods for this purpose. The total protein tuberculin reaction (Seibert) is extremely sensitive and will detect a higher proportion of positive reactors than will old tuberculin in doses a hundred times as great. The dermotubin test, less sensitive than the intradermal test, is extremely useful because of the ease and painlessness of its application. It is well suited to routine office use. The Pirquet scarification reaction is greatly inferior to either the intradermal or dermotubin test. Either of the latter is therefore preferable for routine use. In a series of 647 consecutive children a positive reaction to one or more of the tests was obtained in 185, and 111 reacted positively to all tests.

Journal of Pharmacology & Exper. Therap., Baltimore

50: 241-346 (March) 1934

Diuretic-Antidiuretic Activity of Posterior Pituitary Extracts. E. E. Nelson and G. G. Woods, Ann Arbor, Mich.—p. 241.
Effects of Morphine and Its Derivatives on Intestinal Movements: I. Morphine and Codeine Isomers. H. M. Krueger, Ann Arbor, Mich.—p. 254.
Heat Regulation and Water Exchange: XVII. Relation of Serum Osmotic Pressure to the Onset of Fever. H. G. Barbour and A. Gilman, New Haven, Conn.—p. 277.
*Action of Amyl Nitrite in Complete Heart Block. A. R. Gilchrist, Edinburgh, Scotland.—p. 286.
Maintenance Requirements of Myxedema Patients: Clinical and Chemical Assay of Commercial Thyroid Preparations. J. Lerman and W. T. Salter, Boston.—p. 298.
Investigation into Action of St. Johns Wort. C. H. Horsley, Sydney, Australia.—p. 310.
Toxicity and Anesthetic Efficiency of New Local Anesthetic. L. S. Fosdick and H. L. Hansen, Chicago.—p. 323.
Effect of Some Compounds of Barbituric Acid and of Urethrane. N. Rakieten, L. H. Nahum, D. DuBois, E. F. Gildea and H. E. Himwich, New Haven, Conn.—p. 328.
Mechanism of Sudden Death in Experimental Acute Benzol Poisoning. L. H. Nahum and H. E. Hoff, New Haven, Conn.—p. 336.

Action of Amyl Nitrite in Complete Heart Block.—Gilchrist recorded the response of seven cases of complete heart block to the inhalation of amyl nitrite by continuous electrocardiograms over the period of changing blood pressure. In two subjects a remarkable increase in ventricular rate was observed, the percentage acceleration amounting to 83 and 93, respectively. By contrast the corresponding auricular gain was in the neighborhood of 30 per cent in each of these cases. Amyl nitrite did not relieve the block. In the remaining five cases, while the auricles were accelerated by various amounts of the drug, the ventricular gain was slight, ranging from 1.5 to 18.5 per cent of the resting rate. Employed as a rough and ready clinical test for the elucidation of the nature of bradycardia, this would imply that, while a failure to accelerate after the inhalation of amyl nitrite is in favor of complete heart block, acceleration in itself is compatible with the presence of complete dissociation. In other words, a negative response favors complete block but a positive does not exclude it. No striking alterations were observed in the form of the electrocardiographic deflections except in one case, and no untoward symptoms occurred even in the two cases complicated by free aortic regurgitation.

Journal of Thoracic Surgery, St. Louis

3: 221-332 (Feb.) 1934

Future Surgical Status of Collapse Therapy Patient. T. J. Kinsella, Oak Terrace, Minn.—p. 221.
Esophagectomy for Carcinoma of Upper Esophagus with Lessons Derived from Operative Failure. P. E. Truesdale, Fall River, Mass.—p. 235.
Oidiomycosis of Lungs: Report of Case Due to Species of Geotrichum. D. T. Smith, Durham, N. C.—p. 241.
Pathogenesis of Bronchiectasis. J. A. Miller, New York.—p. 246.
Exploration of Lesion and Pneumocervicolysis in Operative Treatment of Pulmonary Tuberculosis. H. Neuhof, New York.—p. 270.
Intrapleural Pneumolysis: Critical Review. J. A. Moore, Asheville, N. C.—p. 276.
*New Principle of Pulmonary Collapse with Production of Extreme Atrophy and Cirrhosis of Lung: Experimental Study. J. J. Wolfe, T. T. Wang and C. M. Van Allen, Peiping, China.—p. 300.
*Extra-Intrapleural Supraclavicular Apicolysis: New Method for Collapse of Adherent Apical Pulmonary Cavities. M. Joannides and P. Shapiro, Chicago.—p. 315.
Childbirth Following Thoracoplasty: Case. W. Haymaker, Wallum Lake, R. I.—p. 322.
Diaphragmatic Hernia in Rabbit. J. D. Bisgard, Omaha.—p. 325.

New Principle of Pulmonary Collapse.—Wolfe and his associates experimented on twenty dogs to test a method on normal lungs whereby one portion of the organ was afforded vigorous compression with such reduction in size and such cirrhotic change as to render it virtually extinct by causing its pleura to thicken and shrink. The lobe was enclosed as far

as the hilus in a loosely fitting envelop of thin rubber and then was left fully inflated. The foreign body produced an intense pleural reaction, so that free fluid accumulated and the pleura in contact with the rubber became thickened and fibrous. The fluid collapsed the lobe and soon afterward underwent absorption, while the fibrous capsule of the lobe maintained and furthered the collapse by shrinking progressively. The envelop relaxed in folds about the organ. Hyperemia and fibroblastic proliferation developed in all parts of the parenchyma, and the cirrhosis progressed until all respiratory structures except the largest bronchi were replaced with scar tissue. These tubes remained intact, although collapsed. The shrinkage was so extensive as to reduce the lobe in a few months to a small, firm mass. The space so left was filled mainly by the neighboring lobes, which were hypertrophied, and otherwise by the heart, hemidiaphragm and chest wall, which were slightly displaced. The pulmonary compression obtained by this method is unique because of its independence of mediastinal stability, as well as because of its superior forcefulness. It should have special advantage when used clinically for collapsing stiff walled cavities of the lung. Also, the cirrhosis may possibly prove advantageous for limiting and healing noncavernous lesions. However, further study of the meaning of the parenchymatous changes and much technical refinement are needed before application is made to man.

Extra-Intrapleural Supraclavicular Apicolysis.—Joannides and Shapiro propose a method for the collapse of adherent apical pulmonary cavities, to be used especially in cases in which there are definite contraindications for thoracoplasty. This operation may be performed independently or at one sitting when either a scaleniotomy or a phrenic neurectomy is done. It does not require a larger incision than that which is necessary for a scalenus muscle section or a phrenic nerve resection. The operation is comparatively safe when one keeps in mind the important anatomic structures in this region: the carotid sheath with its contents, the transverse cervical artery, the trunk of the cervical sympathetic, the brachial plexus and the subclavian vessels.

Journal of Urology, Baltimore

31: 257-422 (March) 1934

Papillomatous Tumor of Renal Pelvis Associated with Similar Tumors of the Ureter and Bladder: Review of Literature and Report of Two Cases. F. N. Kimball and H. W. Ferris, New York.—p. 257.

*Nephrostomy as a Preliminary Drainage in Preparation for Secondary Nephrectomy. R. Gutierrez, New York.—p. 305.

Anatomic and Functional Disturbances of Adrenal Gland in General Visceroptosis. O. S. Fowler, Denver.—p. 363.

Exocrine and Endocrine Functions of Testicles. W. E. Lower, Cleveland.—p. 391.

Clinical Evaluation of Quantitative Excretion of Prolan A in Teratoma Testis. R. S. Ferguson, New York.—p. 397.

Sterility in the Male: Clinical Study. J. S. Read, Brooklyn.—p. 411.

Nephrostomy Preliminary to Nephrectomy.—Gutierrez calls attention to the importance of a preliminary nephrostomy before carrying out nephrectomy in selected cases of pyonephrosis in which the condition of the patient does not warrant exposing him to the shock of the removal of the diseased organ. Nephrostomy as a preliminary drainage is not recommended in tuberculous pyonephrosis, when the kidney can be readily exposed and removed without any difficulty. The author states that, irrespective of the surgical difficulties that may be encountered during the performance of a secondary nephrectomy, the final results in many instances of large and extensive pyonephrotic kidneys will justify the conservative method employed. The mortality is much lower after two-stage nephrectomy than after a hasty primary subcapsular nephrectomy. The author believes that the standardization of this surgical procedure will undoubtedly serve not only to relieve the temporary symptoms but also to bring about permanent cure in many grave cases.

Kansas Medical Society Journal, Topeka

35: 81-120 (March) 1934

Overweight: Its Cause and Treatment. E. H. Hashinger, Kansas City, Mo.—p. 81.

Obstetric Hemorrhage Ante Partum. E. A. Reeves, Kansas City.—p. 84.

Management of Occipitoposterior Position. H. C. Clark, Wichita.—p. 87.

Malignancies of the Skin: Report of One Hundred and Twenty-Two Cases. J. G. Missildine and J. V. Van Cleve, Wichita.—p. 90.

Kentucky Medical Journal, Bowling Green

32: 137-182 (March) 1934

Contagious Diseases: Scarlet Fever. J. W. Armstrong, Berea.—p. 140.

Id.: Diphtheria. R. K. Galloway, Henderson.—p. 142.

Id.: Anterior Poliomyelitis. F. Campbell, Somerset.—p. 144.

Saturation Irradiation by Deep X-Ray Treatment for Cancer of the Breast. W. J. Young, Louisville.—p. 149.

Some Problems in Traumatic Surgery. J. N. Kerns, Louisville.—p. 151.

Cancer of the Skin. R. L. Kelly, Louisville.—p. 155.

Meningovascular Syphilis. P. S. York, Glasgow.—p. 158.

Significance of Cardiac Pain. E. B. Houston, Murray.—p. 161.

Five Cardinal Signs of Danger in Pediatric Diagnosis. T. C. Smith, Louisville.—p. 167.

Hyperemesis Gravidarum. S. P. Oldham, Owensboro.—p. 170.

Postoperative Pulmonary and Circulatory Complications of Spinal Anesthesia and Ether. H. S. Frazier, Louisville.—p. 174.

Laryngoscope, St. Louis

44: 85-172 (Feb.) 1934

Functional Ear Examinations in Patients with Ménière's Syndrome: Report of Cases. P. Northington, New York.—p. 85.

Consideration of Recurrent Mastoid. A. Fine, Brooklyn.—p. 95.

Neoplasm in External Auditory Canal: Report of Two Cases: Operation, Recovery. H. B. Blackwell, New York.—p. 105.

Acute Mastoiditis, Complicated with Septic Leukopenia and Local Lesions of the Lips, Nasal Orifices and Pharynx, Resembling Those of Agranulocytosis: Report of Case. A. J. Herzig, New York.—p. 109.

Surgery and Dietetic Treatment in Its Relation to Nasal Pathology. E. V. Ullmann, Portland, Ore.—p. 116.

External Ethmoidectomy. E. D. Warren and G. E. Griffith, Tacoma, Wash.—p. 128.

Rhinoscleroma: Report of a Probable Case. P. S. Stout, Philadelphia.—p. 142.

Roentgen Diagnosis and Treatment of Laryngeal Neoplasms. I. S. Hirsch and S. Baum, New York.—p. 144.

New Dilator for Pharyngeal Orifice of Eustachian Tube. L. K. Pitman, New York.—p. 167.

Maine Medical Journal, Portland

25: 21-42 (Feb.) 1934

Caisson Sickness. A. A. Stott, Bath.—p. 24.

Effect of a 1 Per Cent Solution of Silver Nitrate on Growth of Gonorrheal Organism in Vitro: Its Clinical Significance with Respect to the Crede Technic. J. Gottlieb, Lewiston, and W. Freeman, Yarmouth.—p. 28.

The Patient. J. R. Garber, Birmingham, Ala.—p. 33.

Michigan State M. Society Journal, Grand Rapids

33: 115-174 (March) 1934

Blood Chemistry in Nephritis. W. E. Post, Chicago.—p. 115.

Cardiovascular Syphilis. J. L. Chester, Detroit.—p. 131.

Massive Hemorrhage from a Corpus Luteum Cyst. A. D. Allen and W. G. Gamble, Bay City.—p. 139.

Disease as a Factor Influencing History. J. H. Dempster, Detroit.—p. 146.

Military Surgeon, Washington, D. C.

74: 113-168 (March) 1934

Gastro-Enterology and Military Medicine: Utilization of a Modern Specialty in Peace and War. J. L. Intor.—p. 113.

Snake Bites and the Saving of Human Life. M. L. Crimmins.—p. 125.

Gangrene of Scrotum and Penis. B. G. P. Shafroff.—p. 133.

Military Medicine as a Specialty: How Can a Knowledge of It Be Promoted in the Medical Profession, in Civil Life and in the Reserves? J. A. Roddy.—p. 135.

Apparently Stillborn Infants Revived by Intracardiac Injections of Epinephrine. S. A. Cameron.—p. 140.

Missouri State Medical Assn. Journal, St. Louis

31: 89-132 (March) 1934

Tuberculosis in Childhood. S. H. Snider, Kansas City.—p. 89.

Obstruction of Vena Cava Distal to Renal Veins. E. G. Wakefield and C. W. Mayo, Rochester, Minn.—p. 92.

Neurologic Manifestations of Epidemic Encephalitis: Preliminary Report on the St. Louis 1933 Epidemic. J. F. McFadden, St. Louis.—p. 96.

*Pregnancy and Syphilis: Preliminary Report. S. D. Soule, St. Louis.—p. 98.

Stillbirth Problem in St. Joseph, Mo. W. T. Stacy, St. Joseph.—p. 102.

Unusual Anatomic Relation of Common Carotid Artery and Vein to Right Lobe of the Thyroid: Report of Case. F. J. Smith, St. Louis.—p. 105.

Mental Aspects of Crime. G. W. Robinson, Kansas City.—p. 107.

Psychiatric Aspects of Stammering. V. Satterfield, St. Louis.—p. 112.

Pregnancy and Syphilis.—Soule reviews the problem of pregnancy and syphilis. In his clinic an attempt is made to administer as vigorous treatment as the mother will tolerate safely. Prenatal care is given by the same observers at weekly intervals through the duration of treatment; the urine is examined carefully and the blood pressure taken weekly. Each case is individualized and treatment calculated for the remain-

ing duration of pregnancy. Weekly injections of 0.3 Gm. of arsphenamine are given for a period of twelve weeks. Concurrently, in the last three weeks of this period, 1.5 cc. bismocymol is given intramuscularly once a week. After six weeks treatment with bismocymol given once a week, another series of arsphenamine injections is begun. An attempt is made during the early calculation to complete the treatment (at term) under arsphenamine or neoarsphenamine alone on the basis that the arsenical preparations are less irritating to the kidney than compounds of bismuth or mercury. An "adequate" course of treatment is at least eighteen weeks. A preliminary survey of his own patients reveals that at least 80 per cent of the mothers who received six or more arsphenamine or neoarsphenamine injections delivered healthy children with negative blood Wassermann reactions at 3 months of age and without any of the physical stigmas of syphilis. The best results are obtained with treatment from the beginning of pregnancy and pursued throughout the gestation.

New England Journal of Medicine, Boston

210: 457-506 (March 1) 1934

Diagnosis of Chronic Ulcerative Colitis. E. D. Kiefer, Boston.—p. 468.
Pathology of Gastro-Intestinal Tract in Pernicious Anemia and Subacute Combined Degeneration of the Spinal Cord: Study of One Hundred and Fifty-One Autopsies. Madelaine R. Brown, Boston.—p. 473.
Medical Treatment of Gastrojejunal Ulcer. Sara M. Jordan, Boston.—p. 477.
Unusual Etiology of "Fender Fracture." R. Ulin, Boston.—p. 480.
Recent Progress in Physiology. P. G. Stiles, Boston.—p. 482.

210: 507-562 (March 8) 1934

Cancer of the Prostate and Prostatic Diseases. F. L. Hoffman, Philadelphia.—p. 507.
Peptic Ulcer: Its Surgical Management. J. C. McCann, Worcester, Mass.—p. 512.
Some Problems Frequently Encountered in Treatment of Recent Fractures. H. E. Conwell, Fairfield, Ala.—p. 522.
Change in the Massachusetts Cancer Trend. G. H. Bigelow and H. L. Lombard, Boston.—p. 526.
Pericardial Hemorrhage Complicating Scurvy: Case Report. W. E. Barton and W. Freeman, Worcester, Mass.—p. 529.

New Orleans Medical and Surgical Journal

86: 599-650 (March) 1934

Etiology and Pathology of Bacillary Dysentery. C. W. Duval, New Orleans.—p. 599.
Clinical Features of Bacillary Dysentery. D. N. Silverman, New Orleans.—p. 601.
Distribution and Diagnosis of Amebic Enteritis in the Southern United States. E. C. Faust, New Orleans.—p. 605.
Clinical Aspects of Amebiasis. C. F. Craig, New Orleans.—p. 609.
Infection in the Innocent-Looking Cervix as a Causative Factor in Pelvic Lymphangitis. T. B. Sellers and J. T. Sanders, New Orleans.—p. 613.
Fracture of the Hip in the Aged. G. A. Hendon, Louisville, Ky.—p. 619.
Alum Poisoning: Report of Case. L. Levy, New Orleans.—p. 620.

New York State Journal of Medicine, New York

34: 175-220 (March 1) 1934

Surgery on Patient with Diabetes Mellitus. Beverly Chew Smith, New York.—p. 175.
Surgery in Patient Presenting Thyroid Disease. R. V. Grace and C. Weeks, New York.—p. 180.
Surgery in Patients Presenting Pulmonary Disease. F. B. Berry, New York.—p. 183.
Surgery of Infancy and Childhood. E. J. Donovan, New York.—p. 187.
Clinical Study of Persistent Enuresis. M. F. Campbell, New York.—p. 190.
*New Intravenous Therapeutic Agent for Control of Peptic Ulcer. H. A. Butman, L. J. Schultz and L. A. VanKleeck, Manhasset, N. Y.—p. 195.

New Intravenous Agent for Control of Peptic Ulcer.—Butman and his associates used a combination of sodium citrate and sodium chloride buffered to the correct hydrogen ion concentration with a buffer salt in treating twenty cases of duodenal and two of gastric ulcer. Triply distilled water is used and it is sterilized (after the hydrogen ion concentration has been checked by titration) under pressure. It is then transferred under absolutely aseptic conditions into sterile 20 cc. nonsoluble Jena glass ampules. The use of an ordinary 20 cc. syringe is most practical and the dosage has been graduated in the following manner: first dose 10 cc. and for the remaining doses the contents of a 20 cc. ampule. The injection may be given two or three times a week or, in severe cases, every twenty-four hours. They feel that, following the regular course of twenty-four injections, it is advisable to continue giving one injection every two to four weeks for a year. In no case have any untoward reactions other than a pleasant tingling sensation in the tongue and lips been experienced. Hemorrhage, which is a common complication of peptic ulcer, is no contraindication. This therapy permits regular well balanced and well chosen meals from the onset of treatment. The authors believe that the intravenous injection of the solution appears to be more effective in the treatment of peptic ulcer than the classic regimens that have been tried in the past. It approaches more accurately the supposed etiology of peptic ulcer. It promotes healing by: (1) improving the chemical or acid base balance of the blood, (2) improving both the direct and collateral circulation to the ulcer bearing area of the stomach and duodenum, thereby lessening the tendency toward capillary stasis or venofibrosis with consequent malnutrition of gastroduodenal mucosa, (3) improving the tissue resistance to digestion of the same by the gastric secretions, and (4) improving the general circulatory system throughout the body with resulting increased resistance to systemic disease. The authors obtained symptomatic cure in all their patients. As yet they make no positive statement as to permanent cure.

Northwest Medicine, Seattle

33: 73-114 (March) 1934

Individuality in Treatment of Fractures. E. L. Eliason, Philadelphia.—p. 73.
New Vaccine Treatment of Arthritis. K. K. Sherwood, Kirkland, Wash.—p. 78.
Giant Cell Tumor of the Vertebrae. W. E. Grieve, Spokane, Wash.—p. 81.
Etiologic Factors in Disease of the Nasal Accessory Sinuses. H. M. Bouvy and J. B. Flynn, Portland, Ore.—p. 84.
Recent Trends in Treatment of Sinus Disease. R. A. Fenton, Portland, Ore.—p. 90.
General Consideration of Vasomotor Rhinitis: Reported Case of Flaxseed Sensitivity. M. W. Moore, Portland, Ore.—p. 95.
*Nutrient Broth: Protein Treatment of Wounds. W. C. Speidel, Seattle.—p. 99.

Nutrient Broth in Treatment of Wounds.—Speidel employed nutrient broth made up of meat extract, peptone broth; it may or may not contain dextrose as desired and it has some sodium chloride and sodium hydroxide to bring it up to a nonirritating p_H of 7, with the addition of a weak solution of procaine hydrochloride as required. It is applied in the form of a saturated compress, a gauze wick drain, by infiltration into the margins and base of a wound and by irrigation. The author cites the following cases in which this method of treatment was applied: 1. A man having three suppurating wounds on the right elbow, one being three-fourths inch in diameter, another one-half inch in diameter and a third one-eighth inch in depth, that had been variously treated with indifferent results for four weeks following injury and infection. Two days subsequent to injection with nutrient broth and application of a small compress under cellophane they were healed. 2. An extensive and dissecting fistula-in-ano in which, after complete dissection of the tract, the usual method of leaving it packed and open to granulate was replaced by infiltration with broth and primary closure. This resulted in primary union. 3. A patient having a diffuse, right-sided, suppurative, perforative appendicitis, whose wound was closed without drainage after removal of the appendix and the injection intraperitoneally of 400 cc. of broth. Convalescence was strikingly normal in regard to the peritoneum. The wound, however, healed with suppuration, the explanation being that broth had not been injected into the walls of the abdominal incision. The author concludes that there have been many similar instances, for example, carbuncles, furuncles and indolent ulcers, but that the foregoing cases serve to indicate the general utility of the treatment.

Ohio State Medical Journal, Columbus

30: 129-192 (March 1) 1934

Newer Aspects of Management of Hyperthyroidism. G. M. Curtis and F. J. Phillips, Columbus.—p. 149.
Statistical Study of Peptic Ulcer. M. E. Blahd, Cleveland.—p. 156.
Vagaries of Venous Thrombosis. W. H. Bunn, Youngstown.—p. 159.
A County Plan for the Control of Tuberculosis. C. L. Hyde, Akron.—p. 162.
Relationship of the Autopsy Surgeon and the Embalmer: Preliminary Report. J. Forman, Columbus.—p. 167.

Philippine Islands Med. Association Journal, Manila

14: 37-80 (Feb.) 1934

Rupture of the Uterus: Report of Cases in the Philippine General Hospital from 1910 to November 1933. B. Roxas, A. Baens and J. R. Katigbak, Manila.—p. 37.

Mortality from Tuberculosis of the Lungs in a Rural Community (Binangonan, Rizal). M. M. Aycardo, Manila.—p. 42.

Economic Problems of the Medical Practitioner. O. L. Villacorta, Manila.—p. 55.

Public Health Reports, Washington, D. C.

49: 183-220 (Feb. 9) 1934

Sensitivity, in Vitro, of Bacteria to the Beta and Gamma Rays of Radium. R. R. Spencer.—p. 183.

Liquid Sulphur Dioxide as a Fumigant for Ships: Part I. Advantages, Methods, Apparatus and Costs. C. L. Williams.—p. 192.

49: 221-250 (Feb. 16) 1934

Effect of Flea Passage on Epidemic Typhus Virus. R. E. Dyer. —p. 224.

Volume Changes of Tumor Cells in Vitro. M. J. Shear and L. C. Fogg.—p. 225.

49: 251-288 (Feb. 23) 1934

Studies on Standardization of Vibrion Septique Antitoxin. Ida A. Bengtson.—p. 251.

49: 289-320 (March 2) 1934

Mortality in the Native Races of the Territory of Alaska, with Especial Reference to Tuberculosis. F. S. Fellows.—p. 289.

Further Observations on Agglutination of Proteus X Strains in Rocky Mountain Spotted Fever (11). G. E. Davis, R. R. Parker and Mary E. Walker.—p. 298.

Rhode Island Medical Journal, Providence

17: 17-34 (Feb.) 1934

Abdominal Emergencies in Infancy and Childhood. H. W. Hudson Jr., Boston.—p. 18.

Diuretics in Treatment of Renal and Cardiac Edema. M. N. Fulton, Boston.—p. 26.

South Carolina Medical Assn. Journal, Greenville

30: 29-48 (Feb.) 1934

Strabismus with Some Consideration of Methods for Its Correction. J. W. Jervey Jr., Greenville.—p. 32.

Pain Killers in Obstetric Patients. A. L. Smethers, Anderson.—p. 34.

Southern Medical Journal, Birmingham, Ala.

27: 95-184 (Feb.) 1934

High Points in Thirty-Six Years of Rhinolaryngology. T. W. Moore, Huntington, W. Va.—p. 95.

Nephritis and Pregnancy. H. J. Stander and K. Kuder, New York. —p. 99.

Functional Uterine Bleeding. F. E. Keene and F. L. Payne, Philadelphia.—p. 108.

Treatment of Edema in Congestive Heart Failure. C. T. Stone, G. Herrmann and E. H. Schwab, Galveston, Texas.—p. 113.

*Malaria Treatment of Dementia Paralytica: Results in Two Hundred and Five Cases After Five to Eleven Years. W. Freeman, W. W. Eldridge and R. W. Hall, Washington, D. C.—p. 122.

Traumatic Shock and Hemorrhage. A. Blalock, Nashville, Tenn.—p. 126.

Some Therapeutic Procedures Based on Recent Advances in Biologic Chemistry. W. M. Marriott, St. Louis.—p. 130.

Hypoglycemia Due to Adenoma of Islets of Langerhans. N. A. Womack, St. Louis.—p. 135.

*Some New Developments in Renal Surgery. O. S. Lowsley, New York. —p. 139.

Clinical Observations on Redundant Colon (Dolichocolon). J. Friedenwald and M. Feldman, Baltimore.—p. 147.

Observations on Naturally Induced Malaria. M. F. Boyd, Tallahassee, Fla.—p. 155.

Endemic Typhus of the United States. L. F. Badger, Washington, D. C.—p. 159.

Recent Outbreak of Encephalitis at St. Louis. H. S. Cumming, Washington, D. C.—p. 161.

Treatment of Pellagra. J. H. Smith, Richmond, Va.—p. 163.

Treatment of Tuberculosis in Childhood. J. W. Bruce, Louisville, Ky. —p. 165.

Environmental Case Studies in Teaching of Preventive Medicine. H. E. Meleney, Nashville, Tenn.—p. 167.

Arrest of Nutritional Cataract in the Albino Rat by the Use of Vitamin G (B_2). W. C. Langston and P. L. Day, Little Rock, Ark.— —p. 170.

Eclampsia: Report of Case. M. P. Rucker, Richmond, Va.—p. 176.

Malaria Treatment of Dementia Paralytica.—Freeman and his associates present the results of 195 out of a total of 205 dementia paralytica patients whose progress was followed for a period of from five to eleven years after they received malarial treatment. Of these, 31 per cent were discharged from the hospital, 39 per cent remained hospitalized and 30 per cent are known to be dead. The remissions obtained show indications of being permanent and the percentage of recoveries has not declined with the passage of years. Failures in malarial therapy are chargeable largely to delay in its administration and to restriction of the number of paroxysms. Persistently positive serologic responses after three years indicate the probability of failure, but negative responses are often found in deteriorated patients.

Some Developments in Renal Surgery.—Lowsley points out that animal experimentation and clinical experience based on observation at the operating table, functional tests after operations, and pyelographic and microscopic studies prove that (1) hemostasis is most satisfactorily accomplished by tying ribbon gut round kidneys subjected to nephrotomy, (2) there is perfect healing and apposition of the parts, (3) there is the slightest amount of distortion of the kidney pelvis and (4) there is little if any diminution of function in kidneys thus treated. Nephropexy accomplished by the use of chromic ribbon gut as described by the author is a perfectly satisfactory method of operation in suitable cases. Experimental studies and clinical observation of rupture of the kidney convince the author that: 1. Every patient having renal traumatism of sufficient severity to cause hematuria or pain in the kidney should be hospitalized. 2. Examination should be instituted within twenty-four hours if the hematuria continues. 3. Rarely does renal traumatism cause primary rupture of the fibrous capsule, although this structure may be digested by the ferments released by traumatism to the cortical substance resulting in perinephritis, infiltration of urine and pus and in many cases complete destruction of the kidney and menace to the life of the patient. 4. The operation of choice in rupture of the kidney is control of hemorrhage and repair of the lacerated portion of the cortex by means of ribbon gut properly applied. Drainage is accomplished by means of soft rubber tubes. Fat is much superior to muscle or any other bodily tissue as an aid to the control of hemorrhage of the cortex of the kidney.

Surgery, Gynecology and Obstetrics, Chicago

58: 551-678 (March) 1934

Acute Circulatory Failure as Exemplified by Shock and Hemorrhage. A. Blalock, Nashville, Tenn.—p. 551.

Oxygen Pneumoperitoneum in Diagnosis and Treatment of Tuberculosis of the Genitalia, Intestine and Peritoneum. I. F. Stein, Chicago. —p. 567.

The X-Ray in the Study of the Catgut Ligature. P. F. Ziegler and G. L. Clark, Urbana, Ill.—p. 578.

Prevention of Persistent and Recurrent Hyperthyroidism: Based on a Study of Seven Hundred and Sixty-Nine Cases of Exophthalmic Goiter. A. S. Jackson, Madison, Wis.—p. 590.

*Relaxation of Pelvic Joints in Pregnancy. D. Abramson, S. M. Roberts and P. D. Wilson, Boston.—p. 595.

Chronic Follicular Gastritis. C. R. K. Johnston, Cleveland.—p. 614.

Severing Adhesions in Artificial Pneumothorax by Electrosurgical Method. R. C. Matson, Portland, Ore.—p. 619.

Preoperative Treatment of Prostatic Obstruction. A. B. Cecil, Los Angeles.—p. 630.

Cancer Treatment Results as Shown in Twelve Year Survey at Evanston Hospital. W. R. Parkes, Evanston, Ill.—p. 634.

*Automatic Method of Treatment for Fractures of the Tibia and the Fibula. R. Anderson, Seattle.—p. 639.

Surgical Aspects of Polycystic Kidney: Report of Eighty-Five Surgical Cases. W. Walters and W. F. Braasch, Rochester, Minn.—p. 647.

*Two Stage Operation for Fistula-in-Ano. J. H. Allen and B. Haskell, Philadelphia.—p. 651.

Diagnosis and Treatment of Circulatory Disturbances of Extremities. G. de Takáts and W. D. Mackenzie, Chicago.—p. 655.

Relaxation of Pelvic Joints in Pregnancy.—Abramson and his associates believe that relaxation of the pelvic joints and particularly of the symphysis pubis is a normal accompaniment of pregnancy. Relaxation of the symphysis begins in the first half of pregnancy, progresses but slightly in the last three months, and is but little affected by parturition. Retrogression begins immediately following delivery and is usually complete by the end of from three to five months. The process of relaxation is physiologic and is probably the result of hormone activity. Abnormal separation of the symphysis pubis occurs in about 25 per cent and probably results simply from an exaggeration of the normal physiologic process; only exceptionally does trauma play any part. Symphyseal relaxation is accompanied by an increase of pubic mobility and is frequently associated with characteristic symptoms resulting from instability of the pelvic joints. Treatment is indicated to relieve symptoms and

to prevent the development of a condition of chronic relaxation of the pelvic joints, which is frequently responsible for a great deal of later discomfort among women who have borne children. The key to the situation lies in the prompt recognition of abnormal separation of the symphysis when present, and in order to detect this the obstetrician should include the symphysis pubis in his regular routine of examination of the pregnant patient both before and at the time of delivery.

Treatment for Fractures of Tibia and Fibula.—Anderson presents a method of treating fractures of the tibia and fibula with an automatic splint in which fragments are automatically alined and immobilized. The preparation of the leg includes shaving and cleansing with soap and water, and then sterilization with ether and iodine, followed by alcohol if the iodine is strong. An injection of from 5 to 20 cc. of a 2 per cent solution of procaine hydrochloride is made into the skin and down into the periosteum on each side of the tibia at both sites of transfixion, while from 20 to 60 cc. is injected into the hematoma and round the end of each fragment. The distal pin is put straight through the center of the tibia at a point two fingerbreadths superior to the tip of the internal malleolus. Recently the author has changed the site of the superior insertion to transfix the condyles of the tibia at their widest part midway between the anterior and posterior surfaces, just distal to the knee joint. Without incising of the skin or preliminary drilling of the bone, each stainless steel Steinmann pin is forced through by rotary hand pressure alone. Sterile dry dressings, about 3 inches square, spiked over each pin-end, safeguard infection; they are held close to the wound by a bandage of nonsterile sheet wadding. By grasping the foot and pulling on it the assistant raises the leg while the splint is placed beneath and the pins are clamped to their respective horseshoes. The foot and ankle are padded with sheet wadding, special attention being given to protection of the heel. All malposition is now controllable; traction and rotation are adjusted, angulation is corrected and the adjustable foot rest is set. When the reduction is complete, it is roentgenographically checked. Separation of fragments due to overtraction must be assiduously avoided because, notwithstanding perfect alinement, usually no result can be considered satisfactory without end-to-end pressure contact. Immobilization of satisfactory reduction is completed by the application of a cast, which firmly incorporates the pins and generally extends from midthigh downward over the foot plate to slightly beyond the toes. The sole of the foot should be reinforced with a 4 inch plaster bandage. When the plaster is set, the pin clamps are loosened and the leg in its cast is lifted free from the horseshoes and from the foot plate. Ordinary corks are placed on the ends of the pins, which are then covered and fastened to the cast by a plaster bandage. A window cut over the patella serves for subsequent mobilization of the cap, allowing freedom of movement.

Two Stage Operation for Fistula-in-Ano.—Allen and Haskell describe a modification of Pennington's two stage seton method for anorectal fistulas. They obtained good union of the ends of the muscles without deformity and good function of the sphincters with their modified method in 119 cases. The severity of the fistulous process varied widely. Twenty-four were of the "horseshoe type," bilateral tracts communicating either anteriorly or posteriorly to the anal canal. One patient presented fourteen external openings. Sixty-two had two or more external openings. Eight gave both clinical and histologic evidence of tuberculous infection. In one case in which the blood Wassermann reaction was positive, histologic examination of the tissue strongly suggested a syphilitic process. In another, the fistulous tract communicated with a postanal dermoid cyst.

Texas State Journal of Medicine, Fort Worth

29: 671-714 (March) 1934

Surgical Aspects of Lesions in the Optic Chiasmal Region. A. D'Errico, Dallas.—p. 675.
Care and Feeding of the Premature Infant. F. M. Martin, San Antonio. —p. 680.
Diagnosis and Treatment of Bronchiectasis. R. B. Homan, R. H. Homan and R. B. Homan Jr., El Paso.—p. 685.
Extra-Uterine Pregnancy. J. V. Sessums, San Angelo.—p. 688.
Texas Capitalizes on CWA Funds to Aid Public Health. J. W. Brown, Austin.—p. 693.
Acute Conditions of the Abdomen. T. D. Frizzell, Quanah.—p. 695.

Western J. Surg., Obst. & Gynecology, Portland, Ore.

42: 67-126 (Feb.) 1934

Chorio-Epithelioma. R. J. O'Shea, Seattle.—p. 67.
Induction of Labor. J. Vruwink, Los Angeles.—p. 78.
Painful Menstruation, with Especial Reference to Posture as an Etiologic Factor. T. W. Adams, Portland, Ore.—p. 88.
Ankylosis of the Shoulder Joint in Adults: Report of Four Cases. D. G. Leavitt, Seattle.—p. 99.
Inverted T Shaped Incision with Block Anesthesia in Radical Surgery of Maxillary Sinus. E. F. Ziegelman, San Francisco.—p. 103.
Krukenberg Tumor. R. W. Binkley, Selma, Calif.—p. 110.
Spinal Anesthesia in General Practice. A. W. Hoaglund, Minneapolis. —p. 115.

42: 127-188 (March) 1934

Status of Fractures in the Field of Surgery: Presidential Address. S. C. Plummer, Chicago.—p. 127.
Vaginal Calculi. J. C. Masson and A. A. Appell, Rochester, Minn.—p. 132.
Treatment and Results of Severe Fractures of the Elbow. E. M. Miller, Chicago.—p. 139.
Surgical Approach to and Resection of the Splanchnic Nerves for Relief of Hypertension and Abdominal Pain. W. M. Craig, Rochester, Minn.—p. 146.
*Radical Operation for Traumatic Arteriovenous Fistula of Femoral Vessels: Case Report. R. H. Jackson, Madison, Wis.—p. 152.
Résumé of Ten Years of Surgery for Cancer of the Breast. W. A. Coventry and R. J. Moe, Duluth, Minn.—p. 163.
Treatment of Acute Empyema. A. Brown, Omaha.—p. 170.
Neck Dissection for Secondary Malignancy of the Neck Glands. E. D. Twyman, Kansas City, Mo.—p. 175.

Operation for Traumatic Arteriovenous Fistula.—Jackson overcame the danger of hemorrhage and the use of a local anesthetic when completely excising a traumatic femoral arteriovenous fistula of a duration of six years by administering a low spinal anesthesia, completely exsanguinating the limb by applying an Esmarch bandage from the foot to the groin, placing Wyeth pins as for amputation at the hip, applying a tourniquet proximal to the Wyeth pins, and removing the Esmarch bandage. The institution of these measures not only greatly facilitated the technical performance of the operation, which was carried out in a perfectly dry field of uninfiltrated tissues, but also minimized the time required for its performance. The author's patient sought aid because of dyspnea on exertion, due to a dilated and hypertrophied heart ensuing from the establishment of a double circulatory system incident to the establishment of the fistula. The author believes that the decision as to what particular operative procedure—endoaneurysmorrhaphy, transvenous suture or radical excision—should be made only at the time of operation by direct inspection of the lesion. No operation should be undertaken until the collateral circulation test of Matas is positive. The development of a traumatic arteriovenous fistula of the femoral vessels should be prevented at least to some extent by the recognition on the part of the general practitioner and surgeon that every penetrating injury in the vicinity of the femoral vessels which is followed by swelling and ecchymosis of the thigh deserves immediate hospital and competent surgical attention. He suggests that by the use of preparatory and postoperative blood transfusions such patients could be operated on soon after the injury, under spinal anesthesia, and that, by the utilization of Wyeth pins and a tourniquet at the hip, ready access to and repair of the incisional injury to the vessels could be reasonably assured.

Wisconsin Medical Journal, Madison

33: 169-252 (March) 1934

Differential Diagnosis of Hyperthyroidism and Neurosis. A. L. Mayfield, Kenosha.—p. 181.
The Pros and Cons of Biopsy. P. F. Dorge, Marshfield.—p. 184.
Treatment of Intestinal Obstruction: Involving Problems in Abnormal Physiology and Chemistry. E. H. Mensing, Milwaukee.—p. 187.
Amebiasis: Its Clinical Aspects and Control. M. Fernan-Nunez, Milwaukee.—p. 191.
Prophylaxis of Birth Trauma: Some Commonly Neglected Factors. J. W. McGill, Superior.—p. 196.
Double Intussusception of the Bowel. S. M. Welsh and A. R. Coyne, La Crosse.—p. 199.
Endothelioma of the Pleura: Case Report. J. P. Zohlen, Sheboygan. —p. 202.
Idiopathic Torsion of the Omentum: Report of Case. J. L. Benton and M. W. Garry, Appleton.—p. 204.
Primary Carcinoma of the Lung. W. M. Jermain, Milwaukee.—p. 205.
The Physician of Yesterday, Today and Tomorrow. J. F. Bennett, Burlington.—p. 210.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Experimental Pathology, London

13: 1-70 (Feb.) 1934

*Changes in Esterase and Fat Content of Serum Induced by Cancer and Cancer-Producing Agents. H. N. Green.—p. 1.

Studies on Protein-Free Suspensions of Viruses: V. Further Observations on Nature and Antigenic Properties of a Highly Purified Phage. I. J. Kligler and L. Olitzki.—p. 14.

Optimal Agglutination: Significance of Different Ratios of Serum to Bacteria. J. T. Duncan.—p. 23.

Quenation of Pressor Bodies in Blood of Hypertensive Subjects. O. L. V. S. de Wesselow and W. J. Griffiths.—p. 45.

Propagation of Virus of Infectious Laryngotracheitis on Chorio-Allantoic Membrane of the Developing Egg. F. M. Burnet.—p. 52.

Differentiation of Viruses of Fowl Plague and Newcastle Disease: Experiments Using the Technic of Chorio-Allantoic Membrane Inoculation of the Developing Egg. F. M. Burnet and J. D. Ferry.—p. 56.

Attempts to Locate the Site of Antibody Production. G. A. H. Buttle. —p. 64.

Changes in Esterase and Fat Content of Serum Induced by Cancer.—Green observed that during the growth of the rat Jensen sarcoma the esterase content of the serum falls progressively, ultimately reaching a low level. The esterase content of the liver, lung and kidney is much diminished. The phosphatase content of the serum falls, but the average fall is less than half that of the esterase. In rats resistant to inoculation of the Jensen sarcoma the esterase content of the serum tends to rise. The fatty acid content of the serum rises in many and possibly in all rats during the growth of the Jensen sarcoma. It may reach a maximal level, approaching 2 per cent, and then falls during the terminal stages of tumor growth. There is an associated rise in the cholesterol, but of a much less degree. In tar epitheliomas of mice and in localized human carcinomas the serum esterase content ranges round normal, with a tendency to rise slightly. Evidence was obtained that the application of tar or the inoculation of tar or 1:2:5:6 = dibenzanthracene produces a rise in the esterase content of the serum of rabbits in a proportion of cases. The author discusses the possible significance of these observations.

British Journal of Physical Medicine, London

8: 149-168 (Feb.) 1934

Some Experiences in Treatment of Mental Cases by Physical Methods. A. MacGregor.—p. 150.

Ultraviolet Radiation in Mental Disease. L. C. F. Chevens.—p. 153.

Treatment of General Paresis by Hyperpyrexia Produced by Diathermy. N. B. Graham.—p. 157.

Colonic Stasis in Mental Disease. N. W. Kaiser.—p. 160.

Journal Obst. and Gynec. of Brit. Empire, Manchester

41: 1-164 (Feb.) 1934

*Vulvoperineorrhaphy. A. L. Robinson.—p. 1.

Study of Immunity to Hemolytic Streptococci in Puerperal Infection. C. G. Paine.—p. 12.

Significance of Recurrence in Late Toxemias of Pregnancy. G. F. Gibberd.—p. 23.

*Experimental Study of a Rare Case of Hypothyroidism in a Woman. A. L. Mudaliar, K. Venkatachalam and A. N. Ratnagiriswaran.—p. 35.

Early Ectopic Gestation: Case. A. L. Robinson and M. M. Datnow.—p. 46.

Some Unusual Cases of Extra-Uterine Pregnancy. R. E. Tottenham.—p. 56.

Endometriosis of Round Ligament. L. Kaulich and G. Gömori.—p. 63.

Commentary on Operative Treatment of Prolapse, with Report of Death from Intestinal Obstruction After Ventral Fixation. W. N. Searle. —p. 69.

Preternatural Patulousness of Fallopian Tubes: Menace to the Peritoneal Cavity. J. R. Goodall.—p. 78.

Spontaneous Rupture of Uterus at Six and a Half Months. H. Banks. —p. 82.

*Artificial Production of Menstruation with Ovarian Hormones in Cases of Primary and Secondary Amenorrhea. A. Loeser.—p. 86.

Vulvoperineorrhaphy.—Robinson believes that, since it is difficult to obtain and impossible to preserve an aseptic field of operation in the presence of an open intestine, a 1:80 phenol lotion should be employed as an antiseptic throughout the operation. A deliberate attempt should be made to eliminate all actual and potential spaces in the new perineum, because a blood-tight wound reduces the risk of infection and promotes good healing. Special effort should be made to secure hemostasis. The date of operation should be arranged with due regard to the menstrual cycle, so as to avoid, as far as possible, the onset of menstruation during early convalescence. In forty-eight of fifty consecutive operations the author obtained a satisfactory functional result, as shown by the capacity of the patient to retain flatus. The wound in two patients did not heal satisfactorily; both patients had been operated on elsewhere and in one patient, suffering from lupus of the nose, there was a marked suggestion of local tubercle.

Study of Hypothyroidism.—Mudaliar and his associates describe a rare case of thyroid deficiency in a woman, giving rise, in addition to the other symptoms of hypothyroidism, to repeated abortions (but going to term when put on 0.032 Gm. of desiccated thyroid three times a day), to spontaneous flow of milk and to vesical troubles in the baby. Experimentally, it has been shown that the milk of the hypothyroid woman contains a substance capable of inducing contractions of a guinea-pig's uterus at a period of lactation when the milk of normal women does not show evidence of its presence. This substance has been found to be identical with solution of pituitary. This substance is also found in normal women till a few days after delivery, probably to help involution of the uterus. The authors discuss the probability of hypothyroidism being one of the causes of frequent abortion, and the effect of solution of pituitary on the volume of the bladder and its contraction.

Artificial Production of Menstruation with Ovarian Hormones.—During the last year Loeser has treated five cases of primary amenorrhea in which he tried not only to prove histologically the development of menstrual endometrium but to produce menstrual bleeding as well. In three out of these five cases he succeeded in producing normal menstruation with doses of 300,000 mouse units of a preparation of follicular hormone, followed by injections of a luteum hormone. The menstruation was normal, in the sense that the mucous membrane of the uterus curetted on the second or third day of menstruation showed all the distinct histologic indications of an efficiently functioning endometrium on the twenty-eighth day of the menstrual cycle. These women, who were aged respectively 25, 30 and 38 years, had previously never menstruated and had not had any genital bleeding. The uteri of the three patients were hardly palpable and as a result of the treatment the uterus in each case increased in length to 5 and 7 cm. respectively. On the first and seventh day, 1 cc. of the follicular hormone containing 100,000 mouse units was given intramuscularly. On the fourteenth day another injection of 1 cc. (50,000 units) was given, on the nineteenth day 1 cc. (50,000 units), and from the twenty-second to the twenty-sixth day (inclusive) 1 cc. of corpus luteum hormone (10 rabbit units) was given. On the twenty-eighth day menstruation ensued. It is possible, however, by administering stronger doses, and more quickly, to produce menstruation a few days earlier. The treatment not only resulted in menstruation, but also the feminine attributes of the patients, heretofore not strongly marked, were changed physically and psychically. A positive result could not be attained in two cases. Curettings revealed tuberculosis in one; the other one showed that the mucous membrane of the uterus was entirely absent.

Journal of Physiology, London

80: 329-508 (Feb. 28) 1934

Influence of Vagal Stimulation on Conduction Through Branches of Auriculoventricular Bundle in the Dog. A. N. Drury and D. W. Mackenzie.—p. 329.

Biologic Significance of Linkages in Adenosin Triphosphoric Acid. J. H. Gillespie.—p. 345.

Effect of Insulin and Other Factors on Iodo-Acetate Hyperglycemia. J. T. Irving.—p. 360.

Carbohydrate Metabolism of the Kidney. A. Hemingway and H. J. Phelps.—p. 369.

Occurrence of Two Kinds of Hemoglobin in Normal Human Blood. R. Brinkman, A. Wildschut and A. Wittermans.—p. 377.

Some Forms of Apparatus for Equilibration of Blood. J. Barcroft.—p. 388.

Effect of Duration of Work on Efficiency of Muscular Work in Man. G. P. Crowden.—p. 394.

Action of Acetylcholine on Brain and Its Occurrence Therein. B. B. Dikshit.—p. 409.

Estimation of Fibrinogen and Thrombin. J. O. W. Barratt.—p. 422.

Vasodilator Action of Adrenalin. G. A. Clark.—p. 429.

"Inhibition" in Medullated Nerve. L. Bugnard.—p. 441.

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Carbon Dioxide Balance Between Maternal and Fetal Bloods in the Goat. A. B. Keys.—p. 491.

Spectroscopic Method for Study of Hemoglobin in Dilute Solutions. F. G. Hall.—p. 502.

Journal of State Medicine, London

42: 63-124 (Feb.) 1934

Medical Education and the Public Health. E. Graham-Little.—p. 63.
Citizenship in Relation to Social Hygiene. T. D. Shiels.—p. 76.
Citizenship and Parentcraft. D. H. Geffen.—p. 84.
Some Psychophysics of Climate. W. F. Tyler.—p. 98.

Journal of Tropical Medicine and Hygiene, London

37: 33-48 (Feb. 1) 1934

Comments on Blackwater Fever and a Group of Special Cases. G. R. Hall.—p. 33.
Critical Diagnosis of Infection by Trypanosoma Gambiense: A Communication to the Edinburgh Branch of the Royal Society of Tropical Medicine and Hygiene, Nov. 3, 1933. A. MacPherson.—p. 37.

Lancet, London

1: 221-274 (Feb. 3) 1934

Diverticula of Colon and Vermiform Appendix. H. C. Edwards.—p. 221.
Whooping-Cough Eclampsia. J. B. Ellison.—p. 227.
*Simple Method of Controlling a Valvular Pneumothorax. E. R. Boland.—p. 231.
Experimental Production of Cancer by Dust Obtained from Tarred Roads: Note. J. A. Campbell.—p. 233.
Richter's Hernia and Carcinoma of the Colon. R. G. Paul.—p. 234.
Infra-Red Photography of the Superficial Venous System. R. T. Payne.—p. 235.
Congenital Stenosis of the Aortic Orifice. J. Brown.—p. 236.
Paratyphoid B in a Child Aged Four Months. H. B. Hodson.—p. 237.

Method of Controlling a Valvular Pneumothorax.—According to Boland, if a spontaneous pneumothorax occurs, air should be aspirated if there is distress, especially if it is progressive. If the recurrence of the symptoms or rising manometer pressure shows that the perforation is a valvular one, a blunt pneumothorax needle should be left in with a rubber tube attached to it, and inserted with its end just submerged in an open bottle. If this treatment does not relieve the patient and there are any signs of anoxemia, a negative pressure should be produced in the aspirating bottle without delay. A small self-retaining catheter inserted between the ribs with a trocar might be preferable if the patient's condition permits, but the needle is quite sufficient, is more likely to be at hand at times of emergency, and is less likely to introduce sepsis from without. The author presents a case that illustrates the necessity of controlling the treatment with a manometer, and this is always at hand in the artificial pneumothorax apparatus. This method of treatment may be disputed in that the maintenance of the negative pressure means that the perforation will remain patent and will not heal. This might be valid if it were not of primary importance to tide the patient over the effects of the pulmonary disaster. When the patient's life is saved and he has been allowed time to recover from the effects of the initial anoxemia, one can think with deliberation of the methods to be adopted to heal the original perforation. It should not be the aim to produce low negative pressures; only such a pressure as will produce complete relief should be established and if this is done the perforation, which is of necessity a small one, will soon heal over.

1: 275-332 (Feb. 10) 1934

Clinical Data in Asthma. L. J. Witts.—p. 275.
*Right-Sided Duodenum Inversum: Record of Eleven Cases. M. Weinbren, with an account of the development of the duodenum by A. L. McGregor.—p. 280.
*Dry Air for Removal of Fluid from Bronchioles and Alveoli. G. de M. Rudolf.—p. 284.
Prevention of Mineral Oil and Tar Dermatitis and Cancer. C. C. Twort and J. M. Twort.—p. 286.
*New Method of Local Anesthesia for Abdominal Operations. G. Bankoff.—p. 287.
"Splanchnostaxis": Case. H. Hartley and D. M. MacKechnie.—p. 289.

Right-Sided Inversion of the Duodenum.—Weinbren discusses eleven cases of right-sided inversion of the duodenum. Four of the patients were women, ranging in age from 40 to 70. All of these were asthenic and three of them gave a history of recurrent attacks of diarrhea. One had gallstones. The other were men, ranging in age from 26 to 54. Their habitus varied more than that of the women, one of them being 6 feet 2 inches (188 cm.) in height. The others, however, were of the short hyposthenic type. Two of them complained of attacks of diarrhea. All the patients gave histories of dyspepsia, which had persisted for considerable periods, and in two cases the history was suggestive of duodenal ulcer. In the one patient operated on there was no sign of any ulcer, nor was there any sign of any ulcer roentgenographically. The existence of the duodenal abnormality was confirmed at the operation. Two of the patients had had the appendix removed, and in another three the appendix appeared to be pathologic roentgenographically. It is doubtful whether the condition could be diagnosed with certainty clinically. Roentgenographically it will be missed unless the duodenum is traced to the duodenojejunal junction. The appearances once seen on the screen cannot be mistaken. The inverted duodenum may return to normal when the patient is put into the supine or prone positions. A complete examination of the full length of the duodenum during the course of barium meal examination would doubtless reveal many more of these cases. The normal duodenum is divided into four parts: superior, descending, horizontal and ascending. In the case of an inverted duodenum the stomach is generally farther to the left of the spine than usual, and the cap occupies a more transverse position. At the inferior flexure the third part, instead of going to the left of the second part, turns up to the right of the second part and goes on to join or form the duodenojejunal junction, which likewise may be situated abnormally.

Dry Air for Removal of Fluid from Bronchioles.—Rudolf administered dry air to patients in whom signs of excessive pulmonary moisture could be found. Air was given in preference to oxygen, as it is the natural gas to which the body mechanism is adapted. He points out that, although the funnel method of administering dry air is more comfortable for the patient than the catheter method, it should be used only when the catheter method is impracticable, as the air is likely to absorb moisture in passing through the mouth. The quantity of dry air required for each patient is, at present, indefinite, although the author has used a total quantity of more than 400 cubic feet for one patient. His results indicate that dry air is capable of removing signs of fluid from the bronchioles and alveoli. This action reduces the pressure in the lungs and thus relieves the cardiac musculature. The dry air does not, however, prevent further fluid from passing into the air passages after the termination of the treatment. The treatment can be of permanent benefit only by giving the cardiac muscle periods of comparative rest in which to recuperate. In consequence, dry air should be administered frequently over a prolonged period, perhaps of days or weeks. The duration of each administration should be some hours, and at least one-tenth cubic foot of dry air per minute should be given.

New Method of Local Anesthesia for Abdominal Operations.—Bankoff employs the following procedure in abdominal surgery: The patient is prepared in the usual way and one hour before the operation an injection of one-fourth grain (0.016 Gm.) of morphine and 1/100 grain (0.00065 Gm.) of scopolamine is given. The operative field is injected with a 1 per cent solution of procaine hydrochloride forming a rhomb. The injection of the fluid is made through two opposite points equidistant from the line of the incision and radiating over all the field of operation. The needle is then introduced vertically at two points on the line of incision itself, until it pierces the internal muscle fascia. At each of these points 20 cc. of the fluid is injected. The fascia is not difficult to feel, because it offers a resistance to the needle which gives a special sensation to the fingers. Ten minutes after this procedure is completed the field is completely insensible. When the skin and muscle have been cut and the peritoneum is exposed, instead of an opening being made the whole length of the wound a small incision is made about 2 inches long, through which 200 cc. of a 0.25 to 0.5 per cent solution of procaine hydrochloride is poured into the abdominal cavity. It is now necessary to wait for five or ten minutes before proceeding with the operation. After this the peritoneum is opened and the necessary operation performed. This completed, the superfluous fluid is taken from the abdominal cavity by means of swabs or a suction pump. For hysterectomy it is advisable to inject a little of the fluid on both sides of the uterus between the two folds of the large ligament. The author is of the opinion that this type of anesthesia should be adopted in all patients who, for some reason or other, cannot stand a general anesthetic. [NOTE.—A method of this kind was described by Baruch in the *Zentralblatt für Chirurgie*, 1921, No. 23. Baruch reviewed the literature on the subject in the same journal in 1931, No. 19.—ED.]

Presse Médicale, Paris

42: 449-472 (March 21) 1934

Necroptic Observations in Diagnosis of Multiple Lesions of Skeleton. C. Lenormant, P. Wilmoth and J. Pergola.—p. 449.
Addison's Disease with Larval Symptomatology and Prolonged Development: Value of Roentgenologic Diagnosis. M. Faure-Beaulieu, L. Lyon-Caen and M. Brunel.—p. 453.
*Value of Encephalography in Diagnosis, Prognosis and Evaluation of Results of Craniocerebral Traumatisms. A. Lippens and L. Dejardin. —p. 455.
Contribution to Study of Roentgen Diagnosis of Malignant Tumors of Larynx and Hypopharynx. M. R. Mathey-Cornat.—p. 457.
*Absorbable Metallic Material in Bone Surgery. J. Verbrugge.—p. 460.
Lead Poisoning Due to Lead Bullet. G. Londres.—p. 465.
Neighboring Pneumoserosas in Course of Technic of Artificial Pneumothorax. G. Derscheid and P. Toussaint.—p. 468.
Calcification and Circulatory Disturbances of Bone Tissue After Roentgen Irradiation. B. Dahl.—p. 471.

Encephalography in Craniocerebral Traumatisms.—Lippens and Dejardin state that encephalography is generally performed by the spinal route, although in certain cases they did direct ventricular puncture. The patient, on a fasting stomach, receives an injection of a preparation containing papaverine one hour before intervention. He is placed in a sitting position and the puncture is made between the third and fourth spinal vertebrae. The skin is anesthetized by means of ethyl chloride. A Collin needle, 9 cm. in length, to which a manometer is attached, is progressively pushed in until the displacement of the manometer needle indicates the presence of fluid. About 12 cc. of the cerebrospinal fluid is removed and 10 cc. of air filtered through absorbent cotton is insufflated by means of a syringe. This operation is repeated five or six times. The amount used varies from 50 to 60 cc. A clear encephalography necessitates a large amount of air. The cranial cavities must be completely filled. Five minutes after the intervention, roentgenograms are taken in four different positions: face down, anteroposterior face, and right and left profile. These indicate the form and symmetry of the ventricles whose contours have been outlined by the air. The test of lateral transit consists in making the patient lie down for fifteen minutes alternating from right to left. If Munro's hiatus is free, the air leaves the lower ventricle. In case of total impermeability, the transit is not effected. This method is harmless in the diagnosis of cranial trauma and its concussion syndrome if the patient fasts, if the operation is performed slowly and not too soon after the trauma, and if there are no changes in the circulatory system due to advanced sclerosis. The large ventricles normally appear symmetrical according to the amount of air injected; they are at an equal distance from the median line. On the median line the third ventricle lies below and parallel to them. Sometimes there is a difference in the size of the lateral ventricles. The largest size is often observed on the traumatized side. The negatives are generally made in stereoscopic exposure. Through this process the images are clearer and more demonstrative than those furnished by direct examination. In seventy-five cases presenting craniocerebral traumatisms observed by the authors from one to twenty years after the accident, ventriculography offered a positive diagnostic result.

Absorbable Metallic Material in Bone Surgery.—Verbrugge treated twenty-one cases presenting fractures immobilized by magnesium. Of these cases ten were fractures of the elbow in children, two Bennet fractures, one a fracture of the lower epiphysis of the forearm, one a fracture of the humoral diaphysis, one a pseudarthrosis of the clavicle, two fractures of the calcaneum, one a complicated fracture of the instep, one a pseudarthrosis of the internal malleolus, one a spiral fracture of the tibia, one a fracture of the tibial plateau and one an arthrodesis of the knee. The author found that magnesium becomes completely absorbed from the tissues. Its absorption is sufficiently slow to permit the formation of a callus. The metal is neither toxic nor irritating. It does not produce pain but, on the contrary, produces anesthesia. The patients operated on did not develop a febrile reaction. No evident reaction was observed in the soft tissues, the skin, the bone and the joints. The periosteum did not show any more reaction than in the cases in which nonabsorbable material was used and not more than is present in cases of nonoperative treatment. In the course of its resorption, which begins from the time of its introduction, the magnesium owing to its chemical transformation causes the formation of hydrogen without apparently causing unfavorable symptoms. The maximum amount of magnesium introduced was 5 Gm. and this was well tolerated. The formation of a callus seems to be accelerated by the use of magnesium.

42: 473-496 (March 24) 1934

Classification of Nephritides. F. Rathery and P. Froment.—p. 473.
Surgical Treatment and Radium Therapy of Malignant Tumors of Maxilla. G. Maurel and R. Weill.—p. 476.
*Nervous Symptoms of Aurotherapy: Pain, Anxiety and Insomnia Syndrome with Presence of Almost Generalized Fibrillations. J.-A. Chavany and A. Chaignot.—p. 478.

Nervous Symptoms of Aurotherapy.—Chavany and Chaignot observed two tuberculous patients with identical nervous symptoms during treatment with gold salts. After several injections of a total dose inferior to the smallest toxic dose, the following symptoms appeared: diffuse and sharp pains, a state of anxiety, insomnia, almost generalized fibrillations, and hyperhidrosis due to lesions of the nervous system. Insomnia, emaciation and slight fever are indirect symptoms. The sharp and continuous pains were especially present in the limbs and were often accompanied by painful cutaneous hyperesthesia, especially through contact. The anxiety syndrome occurred toward evening and during the night and consisted in fear of death, anguish and nocturnal agitation, with a constant desire to walk. The fibrillations were rapid arrhythmic contractions of isolated fibers of the muscles of the limbs, waist and trunk, to the exclusion of those of the cephalic extremity. The muscular tic is not painful, is accentuated by cold, does not disappear during sleep, and is not soothed by nerve sedatives. The hyperhidrosis in the limbs indicated disturbances of the vegetative nervous system. The objective neurologic symptomatology was vague and there were no localized amyotrophic disturbances. Unaffected by various medicaments employed, these neuropsychic symptoms disappeared without leaving a trace after three months. In both cases the tuberculosis was temporarily aggravated by the appearance of the syndrome. The seat of the lesions serving as an anatomic basis for the syndrome are the cells of the spinal cord, and sensitory and motor cells. The pains observed are characteristic of pains of the cellular type. Fibrillations are generally attributed to an irritative or destructive lesion of the cells of the anterior horn of the spinal cord. The author maintains that, since these fibrillations began and ended with the pains and since neither paralysis nor consecutive atrophy was apparent, there was no evidence of cellular destruction.

Minerva Medica, Turin

1: 273-304 (March 3) 1934

Significance of Early Infiltrate. C. Gamna.—p. 273.
*Reticulocytic Formula and Tuberculous Infection. L. Severi.—p. 275.
*Keloid Scar Formation in Pulmonary Tuberculosis. G. Molinis.—p. 281.
Apicolysis in Pulmonary Collapse Therapy. R. Mariana.—p. 287.
Exogenous Tuberculous Reinfection Possible in Majority of Cases Only Through Pathologically Open Ways. A. Campani.—p. 294.

Reticulocytic Formula and Tuberculous Infection.—While studying the behavior of reticulocytes in tuberculous infection, Severi found that the reticulocytic formula presents a shift to the left. In tuberculosis there is a constant and marked reticulocytosis. In an attempt to determine the normal reticulocytic formula the author studied ten normal and healthy persons of both sexes. The values observed varied from a minimum of 1.8 per thousand to a maximum of 14 per thousand, the average value being 10.8 per thousand, a comparatively higher proportion than that obtained by other authors. If in tuberculous diseases the diminution of the erythrocytes is proportional to the evolution of the disease process and the anemia is only to a slight degree secondary, important deductions may be made from the reticulocytes. The author studied the reticulocytic formula of twenty tuberculous patients and found that there was a constant increase from a minimum of 16 per thousand to a maximum of 18 per thousand. In the reticulocytic formula there was the usual progression of values with a predominance of the granulocytes; but the proportion between the values of the filamentous forms and the granulous forms, which go from a minimum of 2 per cent to a maximum of 21 per cent with a medium value of 8.5 per cent, presented a marked diminution.

Keloid Scar Formation in Pulmonary Tuberculosis.—Molinis made a study of six cases of keloid appearing in the course of pulmonary tuberculosis on the operative scar of phrenicectomy. The keloid growth in these cases was made up essentially of connective tissue rich in capillaries; it also presented abundant cellular elements which later on became fully functioning fibrocytes. Thus the histologic structure of the keloid tissue is different from the common sclerosed cicatricial tissue poor in cells and with few capillaries. There was a hypercalcemia of the keloid tissue probably attributable to hyperfunction of the parathyroids. Of six patients affected with keloid, four presented unilateral pulmonary lesions and two small contralateral lesions. In four the disease dated from ten to sixteen months before operation and there were symptoms of fever, copious expectoration, profuse sweating and general decline in the condition of the patients. The other two, who were ill seven and nine months respectively, showed an analogous symptomatology. A regional skin reaction to tuberculin in the scar area gave positive results in these cases, whereas in nineteen cases of tuberculosis not showing keloid scar formations, allergic manifestations were not demonstrable. The increase in reticulocytes was thought to be an indication of alterations of the erythropoietic tissues. The skin reaction has clearly demonstrated that keloid neoformations respond to particular local conditions of cutaneous allergy. In conclusion the author states that the origin of the keloid scar formation was attributable in his cases to a predisposing tuberculous condition with the necessary presence of a marked demonstrable cutaneous allergy.

Policlinico, Rome

41: 363-402 (March 12) 1934. Practical Section

*Alleged Peristaltogenic Action of Colloidal Silver Introduced into Peritoneal Cavity During Laparotomy. R. Galli.—p. 363.
Protozoan Intestinal Parasites of Man in Five Hundred Consecutive Examinations of Feces in Institute of Medical Parasitology of Rome. A. Panagia.—p. 368.
Relative Value of Endopleural Pressure by Hemostatic Pneumothorax. G. Regoli.—p. 372.
Chloride Metabolism. G. Lolli.—p. 374.

Action of Colloidal Silver in Peritoneal Cavity During Laparotomy.—Galli made a study of the effects of electrolyzed colloidal silver (electrocollargol) when introduced into the peritoneal cavity of 105 patients on whom laparotomies were performed. By means of a syringe the author introduced the contents of from 2 to 5 ampules of electrolyzed colloidal silver, each containing 5 cc. Administration of other medicaments whose action might weaken or hamper the colloidal silver was abstained from. Thirty-two of the patients thus treated had acute abdominal conditions, such as acute appendicitis, circumscribed or diffuse peritonitis due to appendicitis and gastroduodenal perforations, cholecystitis, peritoneal inflammation due to disease of the adnexa, and rupture of tubal pregnancy with an infected hematocele. Aseptic laparotomies were performed on seventy-three of the patients. The postoperative course of these patients was satisfactory and no disturbances due to the introduction of the colloidal silver were observed in any case. The electrolyzed colloidal silver had no modifying effect in any case on general organic conditions, on the course of temperature, heart action and pulse and on postanesthetic vomiting. In only six cases was there any stimulation of the intestinal peristalsis observed which could be attributed to the electrolyzed colloidal silver. Of the six, three were cases of chronic appendicitis and the other three were cases of peritonitis of appendicular origin. In these cases, bowel movements occurred before the administration of enemas the third day after operation. In two cases the peristalsis was reestablished by the first day in a form of several diarrheal attacks with abundant passage of gas, temporary pains and some rectal tenesmus. In the others, one or two regular evacuations occurred without disturbances before the third day. The peristaltic action was never violent or accompanied or preceded by severe abdominal pains or by gastric cramps with severe vomiting. Six cases are insufficient to establish that spontaneous activity of the enteric tract is attributable to colloidal silver introduced into the peritoneal cavity. Colloidal silver has been shown to possess a definite value in the field of abdominal surgery. On the basis of his clinical observations the author states that colloidal silver introduced into the abdomen, the seat of acute peritoneal processes, does not have any effect on the intestinal peristalsis which others have attributed to it. He admits the prophylactic and curative properties of colloidal silver due to a stimulation of the defensive powers of the peritoneal serous membrane.

Archiv für Gynäkologie, Berlin

155: 311-524 (Feb. 28) 1934

*Hypophysis and Castration Obesity. K. W. Schultze.—p. 327.
Occurrence and Rôle of Epinephrine in Follicular Fluid of Ovary. O. Macchiarulo.—p. 335.
Granulosa Cell Tumor with Pubertas Praecox in Child, Aged 4 Years. E. Klaften.—p. 342.
*Creatine-Creatinine Metabolism in Normal and Pathologic Gestation Period, with Especial Considerations of Serum Values. Kessler and H. Albers.—p. 353.
Studies on Vitamin E. F. C. Geller and C. Schuster.—p. 363.
Function of Rabbit Ovaries Autoplastically Transplanted into Anterior Chamber of Eye. K. Podleschka and H. Dworzak.—p. 381.
*Edema of Endometrium. H. Derichsweiler.—p. 408.
Preneoplastic Changes of Cervical Epithelium and Their Relations to So-Called Vaginal Cycle and to Carcinoma Formation. W. Schiller. —p. 415.
Investigations on *pH* Values of Vaginal Secretion of Parturient Women and of Liquor Amnii. A. Bock.—p. 443.
Tumors of Placenta. Z. von Szathmáry.—p. 453.
New Formation of Erythrocytes in the New-Born at Time of Delivery and in First Days of Life. H. Schwalm.—p. 469.
Occurrence of Iron in Milk Gland of Rats and Mice. A. Schultz.—p. 479.
Estimation of Conjugata Externa (Baudelocque's Diameter) in Obstetrics. Von Schubert.—p. 490.
Clinical Experiences with So-Called Mitogenetic Radiation of Blood. H. Gesenius.—p. 500.

Hypophysis and Castration Obesity.—Schultze calls attention to the fact that Anselmino and Hoffmann extracted from the anterior lobe of the hypophysis a substance that produces ketonemia and is identical with one that appears in the blood after meals with a high fat content. Anselmino and Hoffmann ascribe to it a regulatory function in the fat metabolism and designate it as the anterior hypophyseal hormone of the fat metabolism. The author duplicated the studies of those two investigators. He found that under the influence of the anterior lobe of the hypophysis the ketone bodies in the blood increase, and that a substance which appears in the blood during the digestion of fat has the same effect on the ketone body content of the blood. He expresses the opinion that the anterior lobe of the hypophysis is involved in the pathogenesis of the so-called castration obesity. He made fat tolerance tests on normally menstruating women and on patients with castration obesity. He did not find essential differences in the ketone body content of the blood in these two types of women, and thus these tests did not prove a direct connection between the elimination of the hypophyseal substance, producing an increase in the ketone bodies, and castration obesity. In spite of the negativity of these tests, it is possible that the anterior hypophysis plays a part in castration obesity. However, it is probable that the mechanism of the interrelation is more involved than is known at present.

Creatine-Creatinine Metabolism in Gestation.—Kessler and Albers determined the amount of preformed creatinine and of creatine (expressed in creatinine) in the serum of normal, nonpregnant women and also reexamined their elimination in the urine. The amount of the preformed creatinine is constant and the creatinine value fluctuates only within narrow limits (4.5 mg. per hundred cubic centimeters). In healthy pregnant women the creatine curve shows greater fluctuations. In the elimination of creatine the pregnant women more often show a positive value. The serum creatine and the urine creatinine show a slight decrease during pregnancy. In the last months of pregnancy the serum creatine shows strong individual fluctuations. At the onset of delivery the serum creatine value increases again and reaches its maximum at the time of expulsion. The urine creatinine curve reaches its maximum somewhat later, and during the early puerperium it decreases just like the normal creatine curve. The early puerperium is characterized by considerable fluctuations in the different values. After the third week of the puerperium the blood creatine content sinks below that of the nonpregnant women. This decrease during the later puerperium is still greater in the creatinine values of the urine. During early and late toxicosis, as could be shown in some cases of hyperemesis, an increase in the total creatinine values could be observed, but a decrease

in the creatine values partly compensates for the increase in the serum creatinine, that is, an increase in the serum creatinine is frequently accompanied by a decrease in the serum creatine. There is not in every case a parallelism between the height of the blood curve and the elimination values and the severity of the toxicosis.

Edema of Endometrium.—Derichsweiler states that the curettage material of fifty women (aged 40 or over), who asked advice because of irregularities in menstruation, indicated the presence of edema without simultaneous hyperplasia of the glands. The edema was nearly always accompanied by hyperemia and often by hemorrhages into the mucous membrane. The author thinks that disturbances in the hormonic equilibrium at the beginning of the menopausal period are the cause of these disorders. In the increased filling of the vessels of the mucous membrane he sees the main cause of the edema of the endometrium. The greater blood supply, caused either by increased inflow or by inhibition of the outflow, in turn causes an increased transudation and a decreased retrotransudation. Thus the edema of the endometrium is the result of a disturbance in the hydrostatic equilibrium between the vascular system and the tissue pressure.

Archiv für klinische Chirurgie, Berlin

170: 211-326 (March 15) 1934

*Multiplicity of Duodenal Ulcerations and Corresponding Morbid Processes. E. Just.—p. 211.
Faulty Estimation of Renal Function with Iopax: Contribution to Subject of Hydronephrosis. H. Nahrath.—p. 222.
Peritonitis Serum. F. Prochnow.—p. 229.
Dangers of Laminectomies and of Paravertebral Operations. B. Schlesinger.—p. 243.
Primary Lymphosarcoma of Stomach: Case. M. Mátyás.—p. 249.
*Healing of Fractures and Its Mechanical and Biologic Adjuvants. G. Bankoff.—p. 256.
Peroralization of Cysticoduodenostomy. R. Friedrich.—p. 262.
Fracture of First Rib. P. Huber.—p. 280.
Healing of Patellar Fractures. K. H. Link.—p. 290.
*Studies of Cortical and Subcortical Areas in Men. E. Sattler.—p. 300.
Gas Edema, Clinical Diagnosis and Serologic Treatment (As Well As Contribution to Cod Liver Oil Treatment of Wounds). W. Löhr.—p. 312.

Multiplicity of Duodenal Ulcerations.—Just opened the lumen of the duodenum and carefully inspected the duodenal mucosa in a consecutive series of sixty patients operated on for duodenal ulcer. He found that incidence of multiple ulcerations and corresponding multiplicity of pathologic states is greater than was formerly believed. Twin ulcers ("kissing ulcers" of Moynihan) were observed in forty-six, or 76 per cent, of the cases. Scars in the vicinity of ulcers were found in eight cases. These were radiating or starlike. In the rest of the cases the author found large ulcerations involving both the anterior and the posterior wall. These, he believes, were the result of coalition of an anterior wall and a posterior wall ulceration. Consideration of this group of cases suggests that multiplicity of lesions is present in 100 per cent of all cases of duodenal ulceration. These observations lend support to von Haberer's opinion that recurrent ulcers after gastric resection are overlooked ulcers. While observations on so small a group of cases do not rule out the existence of a single duodenal ulcer, they emphasize the great frequency of multiple lesions and the necessity for awareness of this fact on the part of the surgeon.

Delayed Healing of Fractures.—Bankoff states that delayed healing of fractures has become more frequent and that it was observed with particular frequency in fractures the fragments of which were well placed and maintained by means of modern mechanical methods. Various biologic states were cited as the cause, stress being laid on vitamin sufficiency as well as on the disturbance in the correlation of the glands of internal secretion. No investigations of the effect of sexual hormones on the healing of fractures were made so far. Previously the author demonstrated the remarkable influence of sexual hormones on the blood picture. Enormous fall in the number of thrombocytes took place in castrated animals, while hyperhormonization in another series of animals resulted in a rise of thrombocytes to three times the original number. In the present experiment the author used healthy young guinea-pigs weighing from 250 to 300 Gm. One group was kept as a control; in another group the sexual organs were removed and were transplanted into the third group of animals. The tibia was fractured in all the animals. The following results were observed: Satisfactory healing and a thick callus were present at the end of twenty-five days in the control group. Roentgenograms demonstrated that the fracture was not healed in the animals of the second group at the end of three weeks. The callus here was irregular and not compact. The animals of the third group on roentgenologic examination exhibited complete healing of the fracture and a thick callus at the end of two weeks. The author believes that the influence of sexual hormones is to be ascribed to its effect on the blood picture as well as to a direct effect of stimulation of the metabolism. In his treatment of patients with pseudarthrosis, the author combined the mechanical method of multiple percutaneous boring of the fractured ends with injection of an organic preparation of sexual hormones on the tenth day after the operation. The results were exceptionally favorable. Pseudarthroses of months' standing healed in a few weeks.

Studies of Cortical and Subcortical Areas.—Sattler observed the cortical and subcortical areas in men in the course of brain operations carried out under local anesthesia. He found that stimulation of the cortex with a faradic current resulted in an initial hyperemia, which was succeeded by anemia. Repeated stimulation produced anemia without the initial hyperemia. The author demonstrated that the late traumatic epilepsy was caused by the loss of function of the center that regulated inhibitory stimuli, in which case a more deeply located center, whose function it is to release inhibitions, became activated. When the diseased inhibitory center is extirpated, its function is taken over by an adjacent normal center with a resulting recovery. The author found that cooling of the cortex with carbon dioxide snow effected the subcortical ganglions as well, resulting in abolition of tonic and clonic states, the extremities becoming flaccid. The author made the observation that in cases of epilepsy a cooled muscle group (through application of carbon dioxide snow to the corresponding point in the cortex) did not participate in tonic convulsions but went through irregular swinging movements. Isolated electrical stimulation of the subcortical layers produced tonic contractions only. It was found possible to increase the complementary activity of the adjacent tissue described by Monakow by the extirpation of the injured or deceased cortical or subcortical tissue. He found that ligation of the venous plexus lying just below the gyrus centralis posterior resulted rather promptly two hours or, at the latest, twenty-four hours later, in disappearance of the vasomotor and sensory disturbances in the spastic extremities, with a return of the color and warmth similar to that of the opposite healthy extremity. In contradistinction to Forster's method of sectioning posterior roots, the author believes that his method of operating on the brain is more efficient in cases of spastic contractures with severe sensory and vasomotor disturbances.

Beiträge zur Klinik der Tuberkulose, Berlin

84: 255-362 (Feb. 22) 1934

Bronchial Asthma and Tuberculosis. A. Küpper.—p. 255.
*Practical Value of Weltmann's Coagulation Band for Diagnosis and Prognosis of Tuberculosis. A. Makitra and M. Tyndel.—p. 265.
*Value of Weltmann's Reaction in Estimation of Pulmonary Tuberculosis. E. Dissmann.—p. 270.
Case of Traumatic Pulmonary Tuberculosis. Luise Rickers.—p. 278.
Influence of Diaphragm on Ventilation of Pulmonary Apexes. F. R. de Parteerroyo and B. Rodriguez.—p. 280.
Influence of Position of Arms on Normal Capacity of Lungs While Reclining. C. Zoboli.—p. 288.
Tryptophan Content of Blood Serum in Pulmonary Tuberculosis. E. Adler.—p. 291.
*Prognostic Evaluation of Sedimentation Reaction in Stationary and Progressive Cases of Pulmonary Tuberculosis. H. Müller.—p. 299.
Allergy and Immunity in Tuberculosis. J. Siegl.—p. 311.
Permeability of Pleura for Hydrogen in Artificial Pneumothorax. B. Besta.—p. 330.
Growth of Acid-Fast Microcultures. A. Mayer.—p. 335.
*Treatment of Large Apical Caverns. F. Michelsson.—p. 358.

Value of Coagulation Band in Tuberculosis.—Makitra and Tyndel made Weltmann's coagulation test on 200 patients with tuberculosis. They think that in incipient cases of exudative tuberculosis Weltmann's coagulation band gives more reliable diagnostic results than does the sedimentation speed of the erythrocytes. In chronic tuberculosis, Weltmann's test has prognostic value.

Weltmann's Reaction in Estimation of Pulmonary Tuberculosis. — Dissmann performed Weltmann's test 605 times on 274 patients with tuberculosis, on 9 patients with nonspecific pulmonary disorders and on 24 normal persons. He observed a shortening of the coagulation band or a deviation to the left in nearly all cases of exudative inflammatory disturbances, and the extent of the shortening usually corresponded to the severity of the inflammation. Fibrocaseous tuberculosis during the interval and fibrocavernous tuberculosis frequently showed a normal coagulation band. A widening of the coagulation band was noted almost exclusively in purely productive tuberculosis and in the originally open but at the time of examination already closed and healing tuberculosis. The sedimentation reaction and the coagulation band did not always run parallel. The coagulation band seems to be more valuable for the estimation of the inflammatory process than is the sedimentation reaction.

Sedimentation Reaction in Pulmonary Tuberculosis.—Müller believes that the prognosis is generally favorable when in serial examinations the values decrease slowly. High and increasing values give an unfavorable prognosis. Rest, pneumothorax treatment and specific and nonspecific therapy usually lead, together with the clinical improvement, to a reduction of the sedimentation values toward the normal. An increase in the sedimentation speed indicates complications or exacerbation of the tuberculous process, and it makes interruption of the treatment or a reduced dosage advisable. In collapse therapy (pneumothorax and phrenic exeresis), an acceleration of the sedimentation may set in at first. It is the result of the increased resorption of disintegration products, and, as the improvement progresses, it disappears again. In vaccine therapy there is a slightly increased sedimentation after every vaccination, but it disappears again together with the local irritation. Noticeable fluctuations of the sedimentation speed are caused by menstruation, and for this reason the test should be made only during the intermenstrual period. To avoid prognostic errors, one should not overlook that the sedimentation reaction is influenced by the pleuritides and enteritides, which so frequently accompany tuberculosis. The author concludes that the sedimentation reaction is an important aid in the diagnosis and prognosis of tuberculosis, but he also warns against overevaluation.

Treatment of Large Apical Caverns.—Michelsson stresses the advantages of apicolysis. He recommends it not only as a complementary measure to an incomplete pneumothorax but also as a preliminary operation of thoracoplasty. He points out that after thoracoplasty patients often die as the result of a caseous aspiration pneumonia of the other side, owing to the fact that, following the resection of the bones of the thorax, the patient's cough is not strong enough to expel the profuse and generally tough sputum. Frequently the sputum reaches only the trachea, from which it flows into the other lung. The author thinks that this danger can be eliminated by reducing the cavern and with it the amount of sputum by an extrapleural apicolysis. The real thoracoplasty may be done later, but it may be postponed until the patient's general condition and heart have gained sufficient strength. Moreover, since apicolysis does not tax the resistance and the energy of the patients too highly, they more readily give their consent to the later thoracoplasty than is the case in a two-time thoracoplasty.

Deutsche medizinische Wochenschrift, Leipzig

60: 345-382 (March 9) 1934

Phylogenic Development of Nervous Mechanism of Secretion of Intestinal Juice by Means of Added Reflexes. A. Bickel.—p. 345.
Abnormal Position of Abdominal Viscera as Cause of Erroneous Diagnoses. F. Berner.—p. 350.
*Obscure Abdominal Disturbances and Their Symptomatologic Significance. A. Voegeli.—p. 353.
Symptomatology of Atrophy of Gastric Mucous Membrane. R. Korbsch.—p. 356.
Roentgenologic Control Tests of Solubility Conditions of Hardened Gelatin Capsules. K. Kramer and R. Rose.—p. 359.

Obscure Abdominal Disturbances and Their Significance.—Voegeli followed Libman's suggestion and tested the individual sensitivity to pain by exerting pressure on the mastoid process and then proceeding to press in the direction of the styloid process. He concludes that abdominal disturbances have a normal symptomatology only in sensitive patients, while in hyposensitive persons there are only rudimentary symptoms or none at all. Thus it is of the greatest significance for the estimation of the subjective symptoms whether a patient belongs to the sensitive or the hyposensitive group. This knowledge is also helpful in differentiating patients with organic disorders from those in whom the symptoms are of nervous origin.

60: 383-424 (March 16) 1934. Partial Index

Superindividual, Uniform Basis of Therapy. H. Königer.—p. 383.
New Methods of Hormone Therapy in Gynecology. H. Buschbeck.—p. 389.
Treatment of Hemorrhages of Ovarian Origin by Means of Corpus Luteum Preparation. Kaute.—p. 393.
Bactericidal Property of Several Chrysoidin Derivatives and Contribution to Combination of Disinfectants. G. Lockemann and W. Ulrich.—p. 395.
*Sulphur Therapy in Psychoses. A. Langelüddeke.—p. 398.
Pathogenesis and Treatment of Sympathetic Neurosis. Helmy.—p. 400.
*Is Short Wave Therapy of Gastric Ulcer Advisable? Mahlo.—p. 403.

Sulphur Therapy in Psychoses. — Langelüddeke commenced sulphur treatment of schizophrenia in 1927. At first he used a 1 per cent oily suspension of sulphur for the intramuscular injections but, because of pain, he abandoned it and now is using a 0.5 per cent sulphur preparation, which in addition to the sulphur also contains an anesthetic. He begins the injections with 2 cc. and repeats the treatment every second day. At the second and third injections the same dose often produced a higher temperature, but in cases in which the temperature had a tendency to decrease with successive injections the dose was increased by 1 or 2 cc. The treatment was considered completed only after at least six injections had been given. The general reactions are comparatively mild and the dangers are much less than in malariotherapy. In order to be able to determine the value of this sulphur therapy, the author compared the thirty-five schizophrenic patients he treated with sulphur with sixty who had not been treated. He found that among the treated ones the number of those who showed improvement was more than 20 per cent higher than among those who had not been treated.

Short Wave Therapy of Gastric Ulcer.—Mahlo employed short wave therapy in the treatment of chronic gastric ulcer. In twenty-five persons who were treated with short waves under identical conditions, a considerable increase in the gastric motility was noted. Observations before the roentgen screen revealed a considerably increased peristalsis during the short wave treatment, but with the cessation of the irradiation there was a gradual decrease in the peristalsis. The secretion of the gastric juice likewise was increased under the influence of the short waves, but the effects on the acidity were quite different, for it was reduced in nearly all cases. The author concludes that in the majority of cases of chronic ulcer the short wave therapy produces effects that promote cure. He cites one case in which prolonged treatment with the short waves led to gastric hemorrhage, and for this reason he advises caution. The treatment should begin gradually. Most patients find the treatment pleasant and state that it alleviates the pain.

Deutsches Archiv für klinische Medizin, Berlin

176: 231-342 (March 15) 1934

Studies on Clinical Acoustics: Bronchophony. A. Pierach.—p. 231.
Possibility of Utilization of Ingested Sugar in Glycogen Storage Disease. H. Biedermann and W. Hertz.—p. 267.
*Influence of Epinephrine and Insulin on Carbohydrate Metabolism in Glycogen Storage Disease. H. Biedermann and W. Hertz.—p. 272.
Familial Dwarfism. H. Paal and P. Scholz.—p. 281.
Etiopathogenesis of Protracted Subfebrile Conditions. I. G. Gelmann.—p. 290.
Prolan Elimination in Essential Hypertension: Etiology of Hypertension. E. Kylin.—p. 301.
Fruit as Carbohydrate Equivalent in Food of Patients with Diabetes, Liver Disease and Obesity. A. Deindl.—p. 311.
*Complement Titer of Human Serum and Its Changes Following Rheumatic Infections. B. Buchholz.—p. 330.

Glycogen Storage Disease. — Biedermann and Hertz observed in a child with glycogen storage disease and dwarfism that the hypoglycemia is hardly at all influenced by epinephrine and that this slight reaction to epinephrine is dependent on the time elapsed since eating and on the time of day. They consider the possibility of a connection with the insulin secretion. The acetonuria during the fasting period is increased by epinephrine. Patients with glycogen storage disease are highly susceptible to insulin.

Complement Titer of Human Serum.—Buchholz shows that the complement titer represents normally a rather constant value. The ordinary infectious diseases cause hardly any changes, but acute rheumatic infections, which include acute polyarthritis, endocarditis, diffuse glomerular nephritis, choroiditis, pleurisy and some other organic diseases, produce a reduction in the complement titer that may lead to a complete abolition of this function of the serum. The duration of the reduction differs. An especially severe antigen-antibody reaction in an organism that has been sensitized by an infectious focus is considered the cause of the reduction in the complement titer. On this basis, the rheumatic infection presupposes the presence of an infectious focus that causes the sensitization. Horses, which for the production of a potent antitoxic serum are injected with increasing doses of a pathogenic organism, finally develop arthritis and endocarditic processes of the rheumatic type. This observation supports those investigators who tried to show that as the result of focal infections the organism becomes allergic, so that it reacts to new infections with organic reactions that resemble the changes in rheumatic infections. The focal infections sensitize the organism and lead to immunization. At the time when larger quantities of antigen enter the organism, the increase in antibodies prevents the development of a true sepsis. An extraordinarily active antigen-antibody reaction sets in and the complement is reduced. This reduction is generally of a temporary nature, for the antigen is destroyed and the complement is quickly replaced. There is a second possibility. The complement function may suffer so under the shock of infection that it is not equal to the requirements. There may be a prolonged deficiency in the complement and as a result the disease process does not definitely terminate. Moreover, in the absence of the protective function of the organism, other infectious foci may become active. Thus, it is not surprising that in the blood of patients with rheumatism there appear pathogenic organisms, such as tubercle bacilli (Löwenstein), which have no etiologic connection with the disorder.

Klinische Wochenschrift, Berlin

13: 361-392 (March 10) 1934

Formation of Intercellular Substance and Meaning of Term Mesenchyma. K. Bauer.—p. 361.
*Neuroregulation of Human Thyroid and Its Disturbances in Exophthalmic Goiter. P. Sunder-Plassmann.—p. 364.
Edema of Obscure Genesis Connected with Menstruation. S. Molnár and Z. Gruber.—p. 369.
Intravenous Evipan Anesthesia in Treatment of Lupus with Diathermy Loop and in Treatment with Carbon Dioxide Snow. K. Hövelborn.—p. 372.
Blood Groups Among Population of Berlin. F. Schiff and A. Hien.—p. 375.
Duty to Report Diabetes Mellitus. F. Meythaler.—p. 378.
Continuous Registration of Oxygen Saturation of Blood in Unopened Vessels. K. Kramer.—p. 379.
Modification of State of Calcium by Copper. H. Hausler.—p. 380.
Victoria Blue for Staining of Filtrable Viruses. K. Herzberg.—p. 381.
Treatment of Chronic Arsenic Intoxication (Polyneuritis) with Sodium Thiosulphate. A. Werner.—p. 381.
Pulmonary Tumors. E. Haintz.—p. 382.

Neuroregulation of Thyroid.—Sunder-Plassmann studied the innervation of the thyroid. In spite of the great number of sympathetic nerves, it is highly probable that the thyroid does not have a single peripheral ganglion cell. The latter factor makes peripheral automatism by nervous autoregulation impossible, and, since every normal thyroid cell is under the influence of an intraplasmatic, sympathetic terminal reticulum, the normal activity of the thyroid is entirely dependent on the central nervous system (including the sinus caroticus), from which it receives regulatory impulses by way of the sympathetic nerves. If these central nervous impulses become abnormally strong as the result of psychic trauma, of continuous psychic alterations or of chemical or hormone changes (iodine intake or hypophyseal disturbances), a hyperfunction or a dysfunction of every thyroidal cell develops. Up to this stage, at which the condition is still reversible, the term hyperthyroidism (to be differentiated from exophthalmic goiter) can be employed. However, if the harmony is not reestablished, the disorder progresses. It appears as if the pathologic secretion that develops as the result of the dysfunction of the thyroid cell has an injurious effect on the terminal sympathetic reticulum and that it may cause its complete degeneration. By this, the thyroid cells are cut off from the nervous system, so that they do not receive regulatory impulses, and thus the irreversible exophthalmic goiter develops. In addition to destroying the terminal sympathetic reticulum, the abnormal secretion of the thyroid irritates the entire sympathetic nervous system and causes disastrous increases in the tonus. The circulatory regulation becomes impaired and this in turn leads to an involvement of the heart and the blood supply of the brain, because on account of the impaired nervous apparatus of the thyroid the regulatory nervous impulses from the carotid sinus have either no effect or only an abnormal one on the vasculatory system of the thyroid and a normal regulation of the cephalic blood stream became impossible.

13: 393-432 (March 17) 1934

Rôle of Liver in Water Exchange. D. Adlersberg.—p. 393.
Anaphylactic Metabolic Reaction of Isolated Tissues. G. Boström.—p. 399.
*Action of Insulin on Permeability of Kidneys to Sugar. M. Bufano.—p. 403.
Local and Peripheral Examinations of Blood in Several Infectious Diseases. K. Schulze and K. Steuer.—p. 407.
Accident Caused by Strong Electric Current as Cause of Angina Pectoris. P. Hellstrand.—p. 409.
Octaverin, a New Substance with Paralyzing Action on Smooth Muscles. P. Ellinger, W. Koschara and H. Seeger.—p. 411.
When Should Digitalis Be Given in Diphtheria? P. von Kiss.—p. 411.
Increased Antianemic Action of Liver by Influence of Gastric Juice on Liver. F. Reimann.—p. 413.
Occurrence of Qualitatively Degenerating (Toxic Granular) Eosinophil Leukocytes. K. Glaeser.—p. 414.
Forms of Diabetes Insipidus with Excessive Colloid-Osmotic Pressure. E. Baráth and P. Weiner.—p. 414.
Demonstration of Estrus Inhibiting Substance in Pineal Body of Young Female Rats. W. Fleischmann and Helene Goldhammer.—p. 415.
Newer Points of View on Epidemiology of Tuberculosis. A. Hofbauer-Flatzeck.—p. 415.

Insulin and Permeability of Kidneys to Sugar.—Bufano reports eleven series of experiments on dogs and draws the following conclusions: 1. In hyperglycemia, the increased permeability of the kidneys to dextrose depends largely on the autonomous increase of the activity of the kidneys and partly on the stimulation of the vagus, which is produced by the hyperglycemia, and most probably to a certain extent also on the hypersecretion of insulin, which can be observed in experimental hyperglycemia. 2. Insulin does not reduce the permeability of the kidneys to dextrose, for in none of the author's experiments was even the slightest reduction in the permeability noticeable after treatment with insulin. 3. In renal diabetes and in experimental phlorhizin diabetes, insulin increases the permeability of the kidneys to dextrose. 4. The author's experiments do not furnish definite proof that insulin increases the dextrose permeability of normal kidneys. If it is taken into consideration that insulin reestablishes the insulin increase in the sugar permeability of the kidneys of atropinized dogs and also that insulin, which is injected directly into the renal artery, occasionally increases the sugar permeability and then again does not, the conclusion is justified that insulin increases the permeability inconstantly and moderately and that consequently it decreases the sugar threshold of the healthy kidney only slightly.

Münchener medizinische Wochenschrift, Munich

81: 349-386 (March 9) 1934. Partial Index

History of Ergot. W. Straub.—p. 349.
Diagnosis and Specific Therapy of Laryngeal Scleroma. E. Neuber and J. Adam.—p. 351.
*Protein Consumption and Protein Requirements of Human Beings. W. Heupke.—p. 353.
Argyrosis of Skin. A. Reuter.—p. 355.
New Medicinal Aids in Psychiatry. J. Schottky.—p. 356.
Present Status of Foundations of Science of Race. W. Jankowsky.—p. 359.
Significance of Bacteriologic-Serologic Investigations for Diagnosis and Treatment of Gonorrhea. K. Schlirf.—p. 364.
Disease of Civilization. E. Benjamin.—p. 368.

Protein Consumption and Requirements.—Heupke shows that the protein minimum of most diets lies between 30 and 40 Gm. a day. Millions of human beings fill their protein requirements with an intake of from 50 to 70 Gm. without suffering an impairment of their health; 80 Gm. of protein a day must be considered entirely adequate. Impairments traceable to a deficient protein intake are unknown today. Moreover, in a freely chosen diet the protein never goes below the minimum requirements. The author thinks that the fixing of

an optimal amount of protein can be abandoned, the more so since the knowledge about this problem is not yet sufficiently exact to decide on a definite quantity. He thinks that the consumption of unusually large amounts of protein is not advisable. He calls attention to the fact that monks who live on a purely vegetarian diet rarely have hypertension, while monks who take a mixed diet have hypertension about as frequently as do other population groups.

Wiener klinische Wochenschrift, Vienna

47: 321-352 (March 16) 1934

Dispute About Iodized Salt. Wagner Jauregg.—p. 321.
Abortion: Statistics in Austria, Its Social Hygienic Significance and Its Effect on Population Policies. R. Stigibauer.—p. 323.
Significance of Sedimentation Speed for Diagnosis of Acute Coronary Occlusion. M. Burak.—p. 327.
Occurrence of Alcaligenes Abortus Infection in Hungary. L. von Berkessy and Iren B. Simon.—p. 330.
Periarteritis Nodosa. K. Gagstatter.—p. 332.
Chronic Atypical Laryngeal Changes. K. M. Menzel.—p. 335.
*Conservative Treatment of Varicose Veins. G. Nobl.—p. 337.
Various Types of Primary and Secondary Cystitis and Their Treatment. P. Blatt.—p. 339.

Conservative Treatment of Varicose Veins.—Nobl discusses mainly the obliteration treatment by means of injection of hypertonic dextrose or salt solutions. He points out that in the varicose syndrome embolism is not as dangerous as it is in surgery, and he emphasizes that in the obliteration treatment of varicose veins the danger of embolism is much less than in other forms of treatment. Another advantage of the obliteration treatment is that it can be done irrespective of the presence of ulcerations and of severe cutaneous changes, while such conditions contraindicate surgical treatment. Obliteration treatment may be resorted to even during the first half of pregnancy, but it should be avoided during the second half not only because of the extreme dilatation of the vessels but also because of hormonic changes in the coagulability of the blood. Obliteration treatment is contraindicated in case of profuse congenital, neviform venous convolutions, after recent spontaneous thrombophlebitides and after severe disturbances in the circulatory apparatus. The treatment should not be begun until the patency of the deeper veins has been established.

Zentralblatt für Chirurgie, Leipzig

61: 673-720 (March 24) 1934

Rare Forms of Postoperative and Posttraumatic Gas Formation in Tissues. H. Jensen.—p. 674.
Disturbance of Blood Coagulability as Result of Insufficient Fibrinogen. O. Timpe.—p. 679.
*Late Results of Operations for Cholecystitis Without Stones. A. Schmechel.—p. 685.
Etiology and Treatment of Priapism. H. R. Paas.—p. 687.
Thrombophlebitis of Deep Venous Volar Arch Resulting from a Panaritium of a Tendon. W. Rieder.—p. 691.
Eighteen Operations for Perforated Gastric Ulcer Without Death. I. Philipowicz.—p. 693.
Operative Treatment of Idiopathic Varicocele. H. Henninger.—p. 695.

Operations for Cholecystitis Without Stones.—Schmechel states that the prognosis of a cholecystectomy as far as permanent cure is concerned is worse in proportion to the amount of pathologic alteration present at the time of the operation. The less pathologic alteration in the gallbladder, the poorer the result. He reports a follow-up study of sixty patients on whom cholecystectomy was performed in the absence of stones. Only fourteen patients (23.4 per cent) were completely relieved of the symptoms for which they were operated on; fourteen were improved only after one or two years of Carlsbad treatment, and five of the remaining thirty-two were not improved in any sense. Their subsequent cure resulted only after other therapeutic measures; in one case after appendectomy, in two after passage of renal stones, in one after operation for peptic ulcer, and in one after treatment of adnexitis. Two patients were rendered symptom free after treatment of a disclosed latent syphilis. General nervous and functional symptoms were found in eight patients who came to examination. In fifteen patients who continued to have the same symptoms as before the operation, namely, periodic attacks of colics and pain in the back and in the shoulder region, there were found, years after the operation, typical Head zones involving the area from the tenth to the twelfth thoracic nerve. These patients were again treated medically from time to time. The figures presented correspond with those of Stanton, who in a study of 113 patients found 53 per cent improved and 43 unimproved, as well as with those of Gosset, who reported ten cures in a group of thirty-two. The author quotes his chief, von Haberer, as being opposed to the removal of the gallbladder in the absence of stones, even if signs of stasis are present. If operated on at all, the stasis should be relieved not by a cholecystectomy but by a cholecystoduodenostomy. This operation was performed in von Haberer's clinic with good results in exceptional cases of stasis of the gallbladder.

Zentralblatt für Gynäkologie, Leipzig

58: 545-608 (March 10) 1934

Hormonic Content of Cysts and Neoplasms of Ovaries. E. Philipp.—p. 555.
*Treatment of Dermatoses of Pregnancy. A. Lysander.—p. 562.
Peculiar Case of Bleeding Breast. B. Kaminsky.—p. 567.
*Treatment of Menstrual Abnormalities by Means of Parathyroid Extracts and Calcium. G. Bakács.—p. 568.
Table for Examination and Operation with Arm Support for New Apparatus for Intravenous Injection. G. von Bud.—p. 572.

Treatment of Dermatoses of Pregnancy.—Lysander resorted to autohemotherapy in the treatment of thirty-one pregnant women with various cutaneous disorders. Erythema, urticaria and pruritus were predominating (twenty-nine cases), but two women had eczema. The pruritus was particularly annoying. In the majority of women, the dermal disturbances developed during the last two months of pregnancy and only in a few cases already during the fifth or sixth months. The technic of the autohemotherapy is the following: The blood is withdrawn from the cubital vein, is kept in the syringe for several minutes until coagulation has set in, and is injected into the gluteal muscle. At first, the author employed comparatively large doses (from 15 to 20 cc.), but later he used small, gradually increasing doses, usually beginning with 1 cc. Experience so far seems to indicate that the small doses give the same favorable results. The intervals between the injections should be two or three days. The results of autohemotherapy were highly satisfactory. In the majority of cases a single injection was sufficient, but some required two and others three, four or five. In six cases the pruritus was localized on the vulva, and in three of these there was sugar in the urine. Formerly, such cases were treated with a diet deficient in carbohydrates, and occasionally this was effective. The author combined the dietary measures with the autohemotherapy and gained the impression that this combined treatment is superior to the dietary measures. He emphasizes that autohemotherapy is simple, inexpensive and effective and that it involves no danger.

Parathyroid Extract and Calcium in Treatment of Menstrual Abnormalities.—At first Bakács resorted to the application of parathyroid extract and calcium during the menstrual period of women with abnormalities of this function, but later he tried the prophylactic application and found it more effective. Beginning from four to six days before the expected menstruation, the women are given daily intragluteal injections of a preparation containing 50 Collip units of parathyroid extract and a quantity of calcium gluconate corresponding to 0.1 Gm. of calcium. The result of this prophylactic treatment was that 70 per cent of the cases were favorably influenced. The author thinks that the curative effects produced with this medicament are due not merely to the action of calcium but also to the direct or indirect action of the hormone on the hemostatic mechanism.

Novy Khirurgicheskiy Arkhiv, Dnepropetrovsk

29: 1-192 (No. 113) 1933. Partial Index

Treatment of Fractures of Diaphyses of Bones of Leg. G. Ya. Epshtein.—p. 19.
Reduction of Compression Fractures of Vertebrae. B. A. Petrov.—p. 56.
*Systematic Operation in Acute Appendicitis in Every Stage. A. I. Kogon.—p. 84.
Acute Appendicitis. M. V. Krasnoselskii.—p. 101.
Typical Form of Gynecologic Ileus. Ya. M. Voloshin.—p. 115.
Tumors of Bony Cranium. O. M. Rudenko.—p. 137.

Operation in Acute Appendicitis.—Kogon presents an analysis of 150 cases of acute appendicitis in which operation was performed without delay and without regard to the stage of the disease. The results convinced him that systematic operating in every stage of acute appendicitis is more rational

than watchful expectancy after the forty-eight hour period adopted by many surgeons. Watchful expectancy is only relatively safe in mild catarrhal cases after the twenty-four or forty-eight hour period. In the more destructive form of the disease, this policy, owing to the progression of pathologic alterations, is decidedly hazardous. In view of the impossibility of establishing an exact pathologic diagnosis before the operation, the method of waiting appears to be both purposeless and dangerous. The presence of an induration or of resistance in the right lower abdominal quadrant is an important sign of a grave destructive process and therefore constitutes a clear indication for operative intervention. The subsidence of the acute symptoms in the first three days, as well as in a later period, is no guaranty of safety and must not be regarded as a contraindication to the operation. An interim operation is not always a safe operation. The existence of an induration, even if diminished in the process of waiting, constitutes a constant danger of flare up of a dormant latent infection in the tissues. Furthermore, operation in the late cases frequently develops into an extensive and damaging procedure because of the firmness of the adhesions, endangering the life of the patient. The removal of a purulent, gangrenous or perforated appendix results in the disappearance in a few hours of the pain and the other symptoms of peritoneal inflammation, regardless of the time of intervention. The evaluation of the question of the time of intervention must be based not alone on the mortality statistics but on the evaluation of the character of the entire material as well.

Nederlandsch Tijdschrift voor Geneeskunde, Haarlem

78: 1509-1600 (April 7) 1934

Laryngeal Diphtheria. A. Brester.—p. 1513.
*Investigations on Urobilin Excretion and Blood Destruction Index. A. Lichtenstein.—p. 1522.
Diabetes and External Secretion of Pancreas. P. B. van Steenis.—p. 1529.
Novatropine Treatment of Patient Presenting Chronic Encephalitis. W. W. de Regt.—p. 1537.
Full Term Pregnancy in Woman with Sinus Urogenitalis Persistens. T. A. B. van Dijck.—p. 1540.

Urobilin Excretion and Blood Destruction Index.—Lichtenstein studied the urobilin excretion of a number of Europeans on a normal mixed food diet, ten European vegetarians and fifteen Javanese natives. He found that the average excretion of urobilin from the fecal matter of an average European, weighing 154 pounds (70 Kg.), amounts to from 135 to 150 mg. daily, whereas that of an average Javanese, weighing approximately 121 pounds (55 Kg.) comes to only 75 or 80 mg. The author attributes this lower rate of excretion in the Javanese to a consumption of foods poor in animal protein. The average daily excretion of urobilin in ten healthy vegetarians in Amsterdam was estimated to be about 75.4 mg. Persons suffering from constipation evinced a marked diminution in the excretion of urobilin. As a consequence of these investigations the author discards the assumption that by estimating the urobilin excretion one should be able to calculate the average time of survival of the erythrocytes in an absolute number of days. He found the blood destruction index, as proposed by Lichtenstein and Terwen, still of great value.

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Prophylaxis and Therapy in Congenital Syphilis. E. Hval.—p. 241.
*Operative Treatment of Elephantiasis. I. Moene.—p. 264.
*Remarks on Intercal Anesthesia in Cauterization of Pleural Adhesions. O. Haave.—p. 275.
*Elimination of Lepra Bacilli in Lepers. A. A. Stein and M. I. Steperin.—p. 278.
*Roentgenokymography of Heart and Diagnostic Value of This Examination. J. Frimann-Dahl.—p. 281.
Pearl-Like Formations in Renal Cysts. E. Langfeldt.—p. 289.
Compass Fait Test in Normal Persons. G. H. Monrad-Krohn and A. Tellefsen.—p. 292.
Acute Appendicitis in Young Children. E. Pettersen.—p. 296.

Operative Treatment of Elephantiasis.—Moene reports two cases of massive elephantiasis in which wedge-shaped excision, done with the electric knife, and removal of the underlying fascia according to Kondoleon gave good results. The first patient was a woman, aged 66, with elephantiasis of the left leg which had developed slowly during the course of thirty-nine years, and the leg became practically normal. The second patient was a woman, aged 47, with elephantiasis of the left lower extremity of twenty-eight years' duration. The excision was done in three stages, and Handley's operation was performed on the thigh. Considerable reduction in size resulted.

Internal Anesthesia in Cauterization of Pleural Adhesions.—Haave says that as cauterization of pleural adhesions has become more frequent and more complicated anesthesia has more often become necessary. To overcome the difficulties in this connection he has devised a stiff cannula of the form and size of the cautery and ending in a point 3 cm. long and at the handle end in a 5 cc. syringe. If anesthetization is called for, the cautery is readily replaced by this cannula, the same field of vision is kept, and certain anesthesia is attained.

Elimination of Lepra Bacilli in Lepers.—Stein and Steperin succeeded in finding lepra bacilli in the nasal mucus in eleven patients without macroscopic changes in the mucous membrane. They also obtained positive results in "healthy," apparently normal portions of the skin, on examination of lymph from the tissue and of contents of blisters produced by freezing; the latter is the preferred method. By it lepra bacilli were demonstrated in three patients who no longer showed symptoms of leprosy and in whom, even after use of potassium iodide, bacilli could not be found in the nasal mucus.

Roentgenokymography of the Heart.—Frimann-Dahl asserts that the plane kymogram is of great help to the roentgenologist in the determination of the form of the heart and the strength frequency and rhythm of the different pulsations. The method is perhaps of the greatest value in topographic examinations, especially in cases of tumors and tumor-like changes near the heart. Here the plane kymogram is far superior to the ordinary teleroentgenogram.

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*Lecture on Recurrent Agranulocytosis with Note on Dosage of Amidopyrine. M. S. Andersen.—p. 237.
*Amidopyrine as Etiologic Factor in Agranulocytosis. H. Seemann. —p. 241.
New Nosocomial Cases of Agranulocytosis. C. Holten, H. E. Nielsen and K. Transbøl.—p. 245.
Anesthetization of Brachial Plexus According to Kulenkampff. A. Nørraa.—p. 246.
Treatment of Periarticular Disorders with Petrolatum Packs. E. Nyrop. —p. 248.

Agranulocytosis.—In the case described, in a woman aged 42, with obesity, chronic polyarthritis, climacteric disturbances and slight hypothyreosis, one tablet of lealgin (0.22 Gm. of amidopyrine plus 0.03 Gm. of diallylbarbituric acid) was given from one to three times daily for five months in 1930-1931, without apparent injury. In 1932, one tablet was given three times daily for one and one-half months before definite symptoms of agranulocytosis were seen. Although the dosage was increased to one tablet four times daily, recovery from this attack of agranulocytosis occurred. The first recurrence appeared six weeks later and a repeated recurrence in two months. After administration of twenty-five barbipyrine tablets, begun one month later, when the blood picture was about normal, and distributed over six weeks, the granulocyte count fell to 8 per cent, and after a subsequent twenty-five tablets, distributed over sixteen days, the granulocyte count was 7 per cent, a value possibly increased because of administration of pentnucleotide. Amidopyrine was discontinued. The granulocyte count rose to 25 per cent. Andersen says that the case agrees with the five nosocomial cases reported by Holten and his associates, but he is inclined to ascribe the injurious effect to the pyrazol ring rather than to the benzene ring. The patient's improvement under the present thyroid therapy is seen as an indication for continuation in the hope of influencing endogenous factors, which may perhaps bear a relation to her agranulocytosis.

Amidopyrine in Agranulocytosis.—Seemann found that amidopyrine or its combinations had been used in thirteen of thirty-six cases of agranulocytosis from 1928 to 1933 and had not been given in fifteen cases; in the remaining eight cases, information was incomplete. In most of the thirteen cases the dosage of amidopyrine to some extent supports the possibility that this medicament played a part in the origin of the agranulocytosis.